THE

Chicago Medical Journal.

A MONTHLY RECORD OF

Medicine, Surgery, and the Collateral Sciences.

EDITED BY J. ADAMS ALLEN, M.D., LL.D.; AND WALTER HAY, M.D.

VOL. XXVIII.—JULY, 1871.—No. 7.

Original Communications.

ARTICLE I.—*On the Use of Carbolic Acid in Diphtheritic Affections.* By F. C. HOTZ, M.D., Chicago.

After the carbolic acid had, recently, been used so frequently and successfully in Surgery to prevent the septic infection, the natural consequence was to try its efficiency in diphtheria, whose most dangerous feature lies in the septic infection. So it was then tried here and there, but abandoned again. I wish, therefore, to draw the attention of the profession anew to this remedy, by reporting a number of cases of diphtheria which, during the last winter, I treated with the most gratifying success with carbolic acid. I used for this topical medication the acid in the following form:

℞ Acid Carbolic, cryst. - - - - - - } ää ʒj;
Alcohol, - - - - - - - - - - }
Aquæ, - - - - - - - - - - - ʒ v;
Tinct. Iodin., - - - - - - - - - ʒ ss. M.

This makes a perfectly clear, transparent mixture, of a brown-red color, which soon, however, passes over into a pale yellow. The combination with alcohol and iodine effectually moderates

the very unpleasant smell of the carbolic acid, and increases its antiseptic effect. This solution was applied to the diphtheritic exudation three or four times in twenty-four hours, by means of a camel's hair brush. In adults and older children, it was, in a diluted form (15 to 30 drops to a cup of water), used also as a frequent gargle, and for injections into the nostrils if the nose was implicated.

I was induced to try this treatment by the report of a German physician,* who saw even the most unpromising cases recover under this medication in a very short time, and as my observations could in every point confirm this experience, I thought it to be of sufficient interest and importance to communicate an account of my cases.

CASE I.

Was called, Dec. 15th of last year, to see a boy, aged 8 years, who two days previously was attacked with fever, severe pain in the throat, and swelling of the cervical glands. Found the tonsils very large, and covered with patches of white exudation. A saline purgative and a gargle of alum was given. But on the following day, Dec. 16th, the patient was in a half soporous state, pulse 140, skin hot and dry; breath fœtid, and a thin offensive fluid was discharged from the nostrils. The tonsils were so large that they nearly closed the isthmus of the fauces. The soft palate and the tonsils were covered with a thick white exudation firmly adherent to the tissue. Mucous membrane of the pharynx deep red, and covered with viscid mucus.

The mixture was applied four times, and diluted with water (20 drops to a teacup) it was frequently used as a gargle and injection into the nostrils. An infusion of digitalis was also given.

Dec. 17th.—The patient conscious; a. m. pulse 115; p. m. 100;

* Dr. Rothe, in *Berliner Klinische Wochenschrift*, June 13, 1870. He reports fifteen cases: in two (children aged 3 and 7 years) the diphtheria was complicated with scarlatina; in one (child of 3 years) with the measles; in five children, from 1½ to 7 years old, the disease had extended to the larynx; in six cases the doctor arrested the disease right in the beginning. All cases did well. Digitalis was given in the acme of the fever; liquor ferri muriatis in the reconvalescence.

the discharge from the nose thicker and inoffensive; the exudation thinner and not extended any further. Digitalis discontinued.

Dec. 18th.—Pulse 96; very little discharge from the nose; exudation only on the uvula; cervical glands diminished in size. Mixture twice more applied to the uvula, and then discontinued. Gargle continued for two days longer, when the patient was discharged cured.

CASE II.

Saw, Dec. 24th, the servant girl in the same family, who was taken sick the previous night with chill and fever, headache and pain in the throat. Pulse 96; tonsils very tender to the touch, enlarged, and covered with patches of white exudation; mucous membrane of soft palate and pharynx deep red, and covered with thick viscid mucus.

The mixture was applied to the tonsils twice daily, and the gargle used every hour. The patient recovered in two days.

CASE III.

Adult in the same house was, Dec. 25th, affected in the same manner as Case II, and under the same treatment he recovered in two days.

CASE IV.

A boy, 5 years old, was attacked with scarlatina, and nothing abnormal occurred during the eruptive stage (Dec. 18th to 22nd), but on the 23rd of Dec. the fever increased in intensity; the cervical glands were swollen; a thin mucus streaked with blood was discharged from the nose, and the boy complained of pain in the throat.

The diluted mixture only was used as injections into the nostrils every two hours.

Dec. 24th—a. m. pulse 125, p. m. 140, the patient unconscious; swallowing impeded, lips and tongue dry; tonsils greatly enlarged and thickly covered with diphtheritic exudation. The same exudation extended over the soft palate and pharynx. Mixture applied three times; injections continued.

Dec. 25th—Pulse 120; the boy decidedly better; conscious, can swallow, though with difficulty; tongue moist; pharynx already freed from exudation; discharge from the nose diminished in quantity and of thicker consistence. Enlargement of the cervical glands diminished.

Dec. 27th—Pulse 96; the patient has good appetite, swallows without difficulty or pain; discharge from the nose has ceased; mucous lining of pharynx and tonsils natural. The patient discharged cured.

CASE V.

An adult, aged 32 years, was, on 3rd of April, attacked with severe fever and stinging pain in the throat; tonsils very tender, enlarged and covered with patches of white, firm exudation (as in Case II,) which also extended over the whole uvula. With two applications of the mixture, and by frequent gargle with the diluted solution, the patient recovered in three days.

CASE VI.

Was called, April 9th, to see a child, 15 months old, who had contracted the measles from a sister. Nothing unusual occurred until the 6th of April (which was the second day of the eruption), when the right eyelids rapidly became swollen, and on the following day the left lids also commenced to be œdematous. On these three days previous to my first visit, the child was very feverish, slept much, and refused to swallow any food. Found, April 9th, the child unconscious, and with high fever. The respiration was difficult, and the cervical glands were much swollen. There was a thin offensive discharge from the nose, whose mucous lining appeared infiltrated with a firm fibrinous exudation. The upper lip swollen and hard, its skin red and glistening, and to a great extent destroyed by diphtheritic ulceration. The tonsils enlarged and covered with thick exudations (partially brown—red from blood), as were also the soft palate and the pharynx. The right upper eyelid was swollen to the size of an egg, so hard and stiff that it was impossible to raise it sufficiently to see the condition of the cornea. As far as the conjunctiva could be seen it was thick and pale from a gelatino-fibrinous exudation. The edge of the right upper lid was partially destroyed by ulceration. The left eyelids were less swollen and hard than the right, their conjunctiva deep red, but smooth, and covered with patches of exudation; the middle of the free edge of the left upper lid was also destroyed by diphtheritic ulceration.

Mixture applied to the conjunctiva as well as to the fauces three times daily, and, diluted (30 drops to a tumbler of water), it was used as a mouth wash and injection into the nostril every hour.

April 10th—Left lids very little swollen; conjunctiva free from exudation. Swelling and stiffness of the right lids also diminished; the diphtheritic exudation thinner, so that the conjunctiva has a pale rosy tint; respiration easier. Treatment continued.

April 12th—No discharge from the nose, its mucous membrane natural; the ulcer of the upper lip healing; the exudation in the fauces very thin; left eye natural; conjunctiva of the right lids (which were soft and of natural size) free from exudation, but red and succulent. The orbicular conjunctiva still showed a thin exudation, and the cornea was opaque, necrotic. Mixture twice.

April 14th—Mouth and fauces clear; also right eye freed from the rest of diphtheritic exudation; but the cornea was totally destroyed. Treatment discontinued.

I saw the child on the 19th again; it had recovered pretty fairly, and all traces of that severe disease had disappeared except the destruction of the right eye, some catarrhal ophthalmia, and great weakness. During the whole sickness good nourishment was all the child took internally.

The following two cases have been under the care of Dr. Mannheimer, to whom I am indebted for their history.

CASE VII.

Was, October 28th, called to see a boy, aged 4 years, who, two days previously, was taken sick with high fever, and severe pain in the throat. Found the cervical glands swollen, and a thin but not offensive discharge from the nose; and diphtheritic exudation covering the lips, tonsils, soft palate and pharynx. The mixture was applied three times daily, and the gargle used frequently. After two days the patient was so much better, that one topical application only was required daily; and after four days more the boy was discharged cured.

CASE VIII.

Saw, in November, a child 2 years old, who was suffering from the same diphtheritic affection of the tonsils, soft palate and pharynx, as Case VII; but complicated by an extension of the exudation to the larynx as a complete aphony, and very difficult respiration indicated. The same treatment as in the previous case was adopted, with the addition that, with a suitable brush, the mixture was applied to the larynx also until, after two days, the voice returned and the respiration was easy. Discharged as cured after ten days.

These cases are not very numerous, but they suffice, in my opinion, to show that the local treatment which was applied had an evident influence on the diphtheritic inflammation. In all cases, the mixture at once arrested the extension of the exudation, and where it was used in the stage of the development, the disease was actually cut short. Although the Cases II, III and V, in themselves alone, are not conclusive evidence for this assertion, because one may doubt their diphtheritic nature, yet they are of great value in connection with Case I. Occurring at about the same time, some in the same house, and all beginning with the same local and general symptoms, they showed this remarkable difference, that in Case I the disease, when let alone, rapidly developed all signs of a severe diphtheritic inflammation, while it passed, as a perfectly harmless affection, in Cases II, III and V, in which the mixture was used at once. And then, I refer to Case VI as the most striking instance; there the diphtheria was fully developed, not only in the throat but also in the right eye, and, the contagious matter being transmitted to the other eye, this was threatened with incipient diphtheritic ophthalmia. But within two days this eye was out of danger, as the inflammation was arrested in its earliest stage, owing to the timely use and the effectual action of the above mixture.

Nor is the efficiency of this remedy less strikingly demonstrated by those severe Cases (Nos. IV, VI and VIII) where the diphtheria was far advanced before the above topical treatment was resorted to. In those cases even, I succeeded always in checking the local inflammation instantly, and soon after the constitutional symptoms subsided also. We farther noticed that under the use of the mixture the exuded matter rapidly diminished in quantity and disappeared, but putrefaction of the exudation, and gangrenous destruction of the mucous membrane never occurred after the remedy had been applied.

I lay great stress upon these observations, as they clearly show that the constitutional disturbance is closely connected with, and entirely dependent on, the local inflammatory process. Just as the general symptoms accompanying an acute inflammation of a joint will assume a very dangerous character when the exudation in the joint becomes purulent or putrid, in the same manner the diphtheria will seriously affect the constitution when the exuda-

tion undergoes putrid decomposition. And the beneficial effect of the above treatment consists, in my opinion, in the prevention of the occurrence of such putrefaction, and in thereby protecting the system from putrid infection, and the mucous membranes from extensive ulceration.

I am well aware that such exclusive topical treatment is strongly objected to by those who consider diphtheria to be a constitutional disease. Though a wide-spread opinion, its correctness has not yet been fully evinced by pathological facts; while, on the other hand, there are many observations which do not speak in its favor. I will mention but a few facts. When one eye is affected with diphtheritic conjunctivitis, we can protect the other eye against contagion, by a bandage applied with the utmost care and accuracy, while internal remedies are of no avail. Nor can such remedies prevent the exudations spreading to the larynx, while we can keep them confined to the pharynx by local applications. And in all records on diphtheria experience has taught that local medication yielded altogether better results than the mere internal administration of medicines. By these and other facts we are well justified in searching for a reliable local remedy in the treatment of diphtheria, though such treatment may not be in harmony with our theory. For I believe the aim of our professional labor to be to investigate into the nature of diseases, but not to find out proofs for an assumed theory.

ARTICLE II.—*The Microscopic Appearances of Cancer Cells.* By I. N. DANFORTH, M.D., Chicago.

Twenty years ago, the opinion was pretty generally entertained in the medical world, that the microscope, if used by skillful hands, was entirely competent to decide as to the malignancy or benignancy of any and all morbid growths. In the twenty-fifth volume of the "American Journal of the Medical Sciences," may be found a lengthy and elaborate article, evidently the product of much and careful study, in which the author, Dr. F. Donaldson, of Baltimore, sets forth the distinctive characteristics of cancer cells, and adds many figures intended to illustrate these peculi-

arities. Dr. Donaldson's attempts at classifying cancer cells should have convinced him, it would seem, that these cells at least, construe very liberally their obligations to conform to the requirements of a uniform law of type. He makes six varieties:

"1. The polygonal, or more or less spherical and ovoid cell.

"2. The caudated cell.

"3. The fusiform cell.

"4. The concentric cell.

"5. The compound, or mother cell.

"6. Agglomerated nuclei, connected by granular homogenous substance."

This classification must certainly have been conceived in a truly liberal spirit. It is broad-gauged enough to cover every cell in every part and organ of the body, whether in health or in disease; and not only that, but also to include every cell in every plant and animal that flourishes upon or walks over the earth, and of every inhabitant of the boundless ocean. Let any one set himself squarely down to the work of imagining what the microscopic appearance of "the polygonal, or more or less spherical and ovoid cell" must be, and he will find himself engaged in a task which is limited only by his powers of imagination. Indeed I can scarcely conceive of an exercise better calculated to develop that faculty of the mind. The fact is, Dr. Donaldson's observations, instead of proving that anything like uniformity exists in the structure and appearance of cancer cells, very clearly proved that the distinguishing characteristic of these bodies is a most perverse and constant want of uniformity, and in doing this, he made a very important and welcome addition to our knowledge of the minute structure of cancerous growths. The very active researches which have been going on in every department of pathological histology during the last few years, have but served to buttress and substantiate the statement that *there is no typical cancer cell*, as there is a typical pus cell and a typical epithelial cell. The very nature of cancer; its comparatively rapid growth; its lawless invasion and destruction of all adjacent tissues; its short life and imperfect organization, and, moreover, its rapid decay, are, each and all, sufficient reasons for expecting many and varying types of cell growth. These several peculiarities are worth glancing at a little more closely.

First: Cancer is a structure of essentially feeble organizing power; in other words, it is endowed with a low grade of vital power. In its mode of growth its behavior is strikingly like the so-called "fungus" or "proud flesh," which is so apt to sprout up in wounds which do not heal kindly. Indeed, it is not perhaps far out of the way to describe it as a sort of fungus growth implanted within or engrafted upon normal tissue. Hence, like all productions of like nature, its growth is rapid as compared with healthy structures; and this very rapidity necessitates incompleteness, or a faulty and unfinished growth. Hence, also, we should expect to find cells in all stages of growth, as well as a multiplicity of cell forms. We find caudate cells, pushing out their processes where they meet with the least resistance—in other words, growing wherever they find room to grow, without, in their haste, stopping to consider the results; we find half-grown cells, looking like overgrown nuclei; large, awkward, angular cells, frequently with several nuclei, (the so-called "mother" or "brood" cells) which seem only intent upon leaving a numerous progeny behind them; cells with one or more "buds" or processes protruding from their walls, which is also a form of cell multiplication, and, finally, cells which combine two or more of these various phases of growth. Therefore, one peculiarity of cancer cells depends upon its rapidity of, as well as faulty growth.

Secondly: Cancer is notoriously lawless and unsparing in its progress. Unlike other morbid growths, it invades all structures which occupy its pathway, infiltrating glands, insinuating its growing germinal matter between the fibres of muscle, or actually trespassing upon the substance of the individual fibre itself; plowing its way into and through osseous tissue; perforating membranes; tapping blood vessels; surrounding and compressing nerves; and, ultimately, destroying and disintegrating whatever it touches. But in accomplishing this work of destruction, cancer liberates very many formed and forming cells which do not properly belong to it. That is, the *normal* cells of *healthy* structure, whether it be glandular or otherwise, become admixed with the *abnormal* cells of diseased (cancerous) structure, just so fast as the latter invades and disintegrates the former. A specimen of epithelial cancer of the lip before me, shows a multitude of epithelial cells which cannot be distinguished from those of the healthy

structure, and these are most abundant at or near the junction of the healthy with the diseased tissue. A specimen of encephaloid of the liver contains very many cells precisely like, and undoubtedly identical with, the secreting cells of this organ, and in both instances, the cells of health and disease lie in the most intimate relations. Here, then, we have another reason for the great variety in regard of form and size, which we so constantly meet with in the study of cancer cells.

Thirdly: The term of life of any given cancer cell is necessarily a brief one; its organization necessarily imperfect, or of low type, and its decay and disorganization rapid. Hence, in almost every specimen of cancer cells, we may expect to find, and, indeed *do* find, many cells in different stages of decay, and, consequently, undergoing various morphological changes. That part of the cell which is first formed is likewise first to die, and the external part, or periphery, (the so-called "formed material") is now almost universally regarded as the oldest portion of the cell; hence we find cells with angular or roughened boundaries, because the external portion is slowly or rapidly disintegrating: but sometimes large masses of the "formed material" will disappear at once, and this gives to many cells their awkward and ill-shaped appearance: others seem to wither and become shriveled, or, possibly, dessicated; hence, we find cells presenting a pinched, dried, starved appearance: others still maintain their integrity in regard of form and size, but become filled with granular matter, which is probably the product of fatty degeneration; hence we find cells which are dark or granular, or cloudy or nebulous in appearance. Again, all cancers speedily undergo—or are constantly undergoing—fatty degeneration both within and between their component cells; or perhaps it is more correct to say that this change always commences *in* the cells, but that the fat drops are shortly liberated as the result of cell-decay. Here then we find still another element of complexity—namely, the presence of many fat globules, both floating free between the proper cells, and likewise enclosed within, or forming a part of, these cells.

It need not, therefore, be a matter of surprise that cancer cells should bid defiance to any and all rules of classification. It is, indeed, rather a matter of surprise that any attempt at such a classification should ever have been made, seeing that, for all diag-

nostic purposes, we are far better off as we are; and, for all pathological purposes, we should not be a hairs-breadth nearer the truth regarding the real *nature* of cancer *with* a formal classification than we are *without* one.

A very important practical question, however, still presents itself, namely, Can cancer be diagnosticated with any degree of certainty, by its microscopic appearances? It is easy enough to answer this question to my own satisfaction; it is possibly less easy to make the response intelligible to those unaccustomed to the study of cell forms. I believe that the practiced microscopist can have little difficulty in satisfying himself as to the character of a morbid growth, provided always he receives the specimen in a a state fit for examination. I have myself received many specimens for examination which consisted of little bits, snipped from the surface of a morbid growth, and then rolled in a dry paper or rag, and carried in the pocket for hours afterward, until they became perfectly hardened and dry. The idea of forming a conclusion from such specimens as these is simply absurd and ridiculous. The constituent cells of such a specimen must of very necessity undergo changes of form and consistency which cannot be obviated by any artificial means; hence, any conclusions drawn from them must be, to say the least, very unreliable. A specimen intended for microscopic examination should be taken from beneath the surface of the tumor, and as near its centre as possible; it should be examined at once whenever this is practicable, and in any event, it should be kept moist until it passes to the hands of the microscopist. If these conditions be complied with, I believe that a correct conclusion can be arrived at in so large a proportion of cases, that the exceptions are not worth considering, if the examination be made by one accustomed to the study of morbid growths. Moreover, I believe that any one who possesses a microscope of fair quality, and who can use it with a reasonable amount of common sense, can satisfy himself as to whether a morbid growth is or is not cancerous in its nature. Possibly a description of cancer cells will still be expected. They are at once very easy and very difficult to describe. If the illustrations and descriptions of these cells given by Glüge, Paget, Henry H. Smith, Beale, Gross, Moore, Bennett and others, be consulted, they will be found to be all very *like* and all very *unlike*,

except when the same engravings have been used by two or more different authors; and this is simply because no two illustrations representing *actual specimens* can be alike. The distinguishing characteristic of cancer cells is a *want of uniformity*, or an absolute non-conformity to any law of type—and this for reasons which I have already given. It is, indeed, true that a cancerous growth, especially in its early stages, attempts to produce cells which are more or less like those of the tissue out of which, or within which, or near which, it is differentiated, as we so often see in the case of epithelial cancer; but this attempt is never successful, even at the very beginning, and it is shortly abandoned in so far as an allegiance to typical forms is concerned. Hence this very want of uniformity in regard of cell forms, constitutes the pivot upon which the diagnosis turns when the microscope is appealed to. It is not because we *can* classify cancer cells that we *call* them such; but rather because we *cannot* classify them. It is not because they are old microscopic acquaintances that we call them malignant; but rather because they are always strangers. In fact it is just precisely this diversity of appearance that proves their malignancy; for it indicates their rapid and lawless growth, their disrespect for and destruction of adjacent tissues, and their rapid death, and these, taken together, constitute the very essence of malignancy. If fifty specimens of keloid be examined, the ultimate elements of each one will be found to be, not precisely alike—for cells are no more precisely alike than leaves or apples or men are precisely alike—but formed on the same general model as regards shape and size, and, therefore, conforming to a law of type. If fifty specimens of ordinary fatty tumor be examined, the same law will be found to hold good. Moreover, in both these cases, the morbid growth will show some respect for the rights of neighboring tissues. If, indeed, the latter are crowded out of their rightful position, they will not therefore be denied the privilege of existing somewhere else. But an examination of twice this number of cancer specimens will only the more absolutely demonstrate the fact that in place of law of type we have lawlessness of type, and that this very lawlessness is the microscopic peculiarity of cancer. Hence, in the so-called "innocent" or "benignant" growths, we are to look for a kind of multiform unity, and in malignant growths, we may, with equal confidence,

expect a uniform multiformity, or an absolute non-conformity to any ideal cell type.

One other, and scarcely less important point should be noticed. Errors of *location* are generally coincident with diversity of form in cancerous growths, and this should be taken into account in establishing the diagnosis. The very fact that a mass of cells have infiltrated or invaded a tissue or organ, and that they persistently and unaccountably vary in size, form and behavior from the normal cells of such tissue or organ, is all but, and perhaps quite, sufficient to stamp them with the seal of malignancy. They are at once recognized as marauders and pirates, intent only upon the destruction of everything within their reach. To attempt to describe a specimen of cancer cells, is to huddle together as many epithets as we can lay our hands on, to pester and perplex the dictionary makers by bringing forth a new progeny of words, and appropriating them to the same use, and, after all, to fail of giving a reliable description of bodies which obstinately refuse to look twice alike. It seems to me that we best describe cancer cells when we simply say that we *cannot* describe them; when we say that they present an endless diversity of forms, and that, *therefore*, they are cancer cells.

In conclusion, I would lay down the following simple rules for drawing the distinction between innocent and morbid growths; whenever a description of *one* of the cells of a microscopic specimen is a description of *all* of its cells, the chances are as ten to one that it is *not* cancer;—whenever, on the other hand, the cells of such a specimen are so varied in form and size that philology and ingenuity and imagination, and the most unflinching resolution combined, utterly fail to accomplish the task of describing them, the chances are as ten to one that the specimen is from a malignant growth, whatever may be its name or location.

PILL-AGE.—Dr. Brandreth, out of his pills, has scraped together almost $2,000,000, and has life insurance policies amounting to $140,000 besides. It is thought he does not take his own pills.

Doctor's Motto—Patients and long suffering.

ARTICLE III.—*On a few Instruments for the Practical Treatment of Uterine Disease.* By PHILIP ADOLPHUS, M.D., Chicago.

(Fourth paper, continued from the May Number.)

1st. Emmet's Applicator, used to apply medicated solutions to the cervix and uterine cavity.

2d. Nott's Intra-Uterine Catheter.

Every one who has handled the perfect instrument, known as Emmet's applicator, is aware of its value. It fulfills the several uses of cleansing the cavity of the cervix and body of the uterus of secretions, and of applying medicated solutions to these parts, with admirable certainty.

Its fitness for the former purpose has been discussed in a previous paper; in this communication the writer will impress the reader with its value, when the medication of this organ is proposed.

Every instrument that is to be used in the uterine cavity, must possess a calibre permitting an easy entrance, and ductility, combined with the requisite firmness. We have seen that Emmet's probe has these qualifications, and that his applicator is a *facsimile* of this instrument,—a little larger, slightly stouter, and flat at its extremity, without the bulb of the other instrument. Made of annealed silver wire, it is capable of assuming every conceivable shape which the hands of an experienced operator may impart to it, and is mounted on a light wooden handle.

A slide, consisting of a compressed coil of brass wire, five inches in length, hollow and flexible, resembling an enlarged watch spring, capped at each extremity by a hollowed bead of gutta-percha, passes over the probe, and acts when the latter is armed with medicated cotton wool, and the coil is propelled towards its point by pushing the roll of cotton off into the neck or cavity of the uterus.

Emmet's Applicator.

It has the following advantages over all instruments used for similar purposes, with which the writer is acquainted: of per-

mitting the introduction of medicated solutions into any part of the cavity, and of depositing them instantly when the parts are reached.

It is convenient to possess probes (applicators) of different lengths, suitable to enter the cavity of the cervix or fundus; one slide will be sufficient for all.

The manner of using the applicator is as follows: Slip the coil over the probe, and arm it with cotton wool. Place patient in the usual position, (semi-prone, when using Sim's Speculum; on the back, when Nott's Speculum is applied) the speculum being in situ, steady the cervix with Nott's Vulsellum, introduce Emmet's probe for the purpose of ascertaining the length, direction and sensitiveness of the uterine cavity; remove it; give the applicator the identical curve which was imparted to the probe, and introduce it, (armed with cotton and moistened with warm water), in the same direction and with equal care, into the uterine cervix or cavity. Remove the applicator now charged with the secretion of the cavity, push the coil or slide towards the end of it, the fouled cotton still adhering will then drop off. This procedure cleanses the parts of accumulated secretions, and prepares them for medication.

Again introduce Emmet's probe as a guide (a very important precept, if you wish to prevent bungling and consequent pain), follow it, on its removal, by another applicator already armed and moistened with the necessary medicated solution, (care must be taken not to *saturate* the cotton wool, else the solution will run into the vagina—a result to be deprecated), insert this into the womb, and whilst sliding the coil towards the cervix with the left hand, withdraw the probe in an opposite direction with the right hand; this manœuvre results in the introduction of a piece of cotton wool, from one to four inches in length, into the uterine cavity, where it may be left in safety, provided the solution is weak.

Much mischief may be done with this instrument as with other caustic holders; for concentrated solutions, as well as liquid caustics, may be applied by it, with ease. The applicator merely places a roll of cotton in the cavity of the uterus; whether the *agent* with which it is charged shall induce benefit or mischief, will depend upon the operator.

This is especially the case with those solutions which do not coagulate or form inert albuminates with the secretions of the cavity. Articles which form these coagulates, when introduced into the cavity smeared with tenacious mucous discharges, are not so dangerous; for these protect the walls from their caustic effect, and preserve the organ in despite of the operator. Far otherwise is it when the heavy muco-purulent covering has been removed, and a denuded, mucous surface, with exposed bloodvessels and capillaries (Nott) receives the caustic application: collapse, general peritonitis, etc., may take place, and death, by metro-peritonitis, has been the result of an application of a solution of ʒj of nitrate of silver to ℥j of water, by means of a camel's hair pencil, to the interior of the womb, as related by Noeggerath.*

In order to determine the advantage of intra-uterine applications, we should study the symptoms of chronic uterine affections, uninfluenced by remedial measures.

Thus we find in these cases, abnormal congestion resulting generally from cold taken during menstruation, and leading to acute uterine catarrh (Klob), which forms the sole and principal condition of many cases of dysmenorrhœa (Tilt).

We have, furthermore, affections dating back from former pregnancies and abortions, which profoundly affect the economy. Exciting causes, such as fatigue, excitement, alarm, and change of temperature, often superinduce increased irritation and hyperæmia, which, happening at or about the monthly periods, result in cellulitis, peri-metritis, ovaritis, salpingitis and general peritonitis.

Will the application of fluid and liquid caustics, under these circumstances, be beneficial? Will they not rather produce these complications? Again, if, after these applications, the patient complains of the painful symptoms so graphically described by authors, as sometimes accompanying medication by caustics, and recovers therefrom; has this result been effected by these caustics, or has not rather the inherent force of her constitution saved her from the effects of injudicious treatment?

The writer concludes, from the results of his observations, that *mild applications, judiciously used, are not merely safe but curative.*

* E. Noeggarath's Contributions to Midwifery and Uterine Pathology. 1858, fol. 30.

Furthermore; that caustics to the interior of the womb are hazardous remedies in able hands, but inadmissible in those of the inexperienced and rash.

Much interest has of late been manifested in the discussion of the question of intra-uterine medication, and it has been examined in all its bearings by Kammerer, Nott, Peaslee and Lente. (See papers published in the New York Medical Journal, and the American Journal of Obstetrics). Many other distinguished men have also expressed their views, either for or against the application of concentrated solutions and caustics to the uterine cavity; but while their views are at variance, there is no doubt that the tendency of the practice of many of the leaders of the profession is towards the abandonment of solid caustics and concentrated caustic solutions, as applications for the interior of the womb.*

In connection with the use of the applicator, it will be proper to state that applications of various strengths have been and are constantly applied for erosions, excoriations and ulcerations of the cervix uteri, by the profession at large. This is considered by the writer erroneous practice. For these simple excoriations and erosions are certainly not more painful than the same lesions on the lip or buccal cavity; they exist in almost every healthy woman, and are neither causes of complaint or treatment, and do not come under our cognizance as such. "When an erosion exists on the cervix, I believe that it is almost without an exception but a cropping out of the diseased condition above, or an excoriation from the uterine discharge constantly bathing the parts." † "Erosions are generally accompanied with acute and chronic catarrh

* Surgery of the Cervix. T. A. Emmet. American Journal of Obstetrics, Feb., 1869, fol. 342.

The Treatment of Endometritis by Uterine Injections. I. C. Nott. American Journal of Obstetrics, Nov., 1869, fol. 470.

I. C. Nott. Intra-Uterine Medication. N. Y. Med. Journal, June, 1870; and American Journal of Obstetrics, May, 1870.

Intra-Uterine Medication. E. R. Peaslee. N. Y. Medical Journal, July, 1870.

Prolapsus Uteri; its chief Causes and Treatment. Thos. Addis Emmet. N. Y. Med. Record, May, 1871, fol. 98.

† T. A. Emmet. Op. cit., fol. 97.

of the uterus and vagina, and are caused either by this or other forms of intumescence of mucous membrane." (Klob, p. 239).

"Granulating ulcers rarely exist independently, but are generally combined with chronic uterine affections."* Clinical experience convinces him that the mucous membranes of the uterus in all its parts, are frequently simultaneously and consecutively affected, and that lesions of the cervix co-exist and are superadded. These views are held by Scanzoni, West, Hewit, Klob and other men of eminence. Moreover, the division, by authors, of these diseases, into affections of the mucous membranes of the body and cervix, and affections of the parenchyma of the body and cervix, cannot, in old standing cases, be distinguished clinically.

Therefore, a general unbiassed view of each case, based on its history and on pathological anatomy, should be always attempted, and the treatment based thereon; for it is not logical to apply local treatment to the cervix exclusively, when the body and fundus are equally implicated.

Another point of great practical importance in the treatment of the sexual organs by local applications, which has not, I believe, even been alluded to by writers, is, that different modifications of treatment in like diseases, must be adapted to the varying circumstances of each patient. Hospital patients, the wealthy, and those having leisure, can bear, *ceteris paribus*, more powerful applications for the same diseases; whilst like applications would be inadmissible in patients who visit the office, or those whose circumstances prevent their resting after treatment.

This appears self-evident, and is consequently taken for granted, yet in practice it is constantly neglected.

Nott's Intra-Uterine Catheter, the instrument now to be described, is used for the double purpose of cleaning the cavity of the uterus of secretions, and of medicating it.

It is simply a double current catheter, made of silver, nine inches in length, and constructed in such a manner that the introduced fluid, injected through a narrow tube, not more than one-fifth the calibre of the catheter (situated along its concave wall), passes into the cavity of the womb; rushes out, not merely

* Pathological Anatomy of the Female Sexual Organs. Julius M. Klob, 1868.

alongside the catheter, where it partly escapes from the os uteri; but it also escapes through a wide canal in the convex portion of the instrument, whence it emerges at the opening. The egress of fluids is facilitated by an aperture, an inch in length, on each side of the catheter (the eyes of the instrument).

Nott's Intra-Uterine Catheter.

The instrument is used in the following manner: The patient having been placed on her back or side, the proper speculum is introduced (Nott's or Sim's), Emmet's probe ascertains the direction of the womb, Nott's catheter is now gently applied to the os, and introduced. If it does not enter easily, no force being permissible, the cavity of the cervix is dilated by Nott's dilator, in the manner described in a former paper. After its introduction, a syringe filled with warm water is inserted into the orifice of the catheter, and its contents gently expelled. This is repeated, until the return current emerging from the womb looks clear, showing that the cavity of the uterus is freed of secretions. The syringe is then again filled with an astringent, detergent or sedative solution, and its contents injected. The catheter is removed, a glycerine suppository is left near the os uteri, and the speculum withdrawn.

In the American Journal of Obstetrics, of February, 1869, is a translation by Dr. Joseph Kammerer, of an article by Dr. J. Cohnheim, Berlin, 1868, entitled "Historical Review of Uterine Injections;" which is exhaustive. It contains extracts of the entire literature of intra-uterine injections up to 1868. Having examined everything accessible on that subject, that had been written up to date; and having, since the introduction of the Intra-Uterine Catheter, by I. C. Nott, of New York City, to the profession in November, 1869, injected the uterine cavity over three hundred times, with tepid water and mild astringent fluids, without pain or other disagreeable manifestations to the patient at the time, or afterwards; the writer merely repeats what has been so well said by Thomas, Tilt, Peaslee, Kammerer, Noeggerath, but especially by Nott, that *intra-uterine injections are*

dangerous whenever in their performance the following prerequisites are disregarded:

1st. *There must be a non-irritable uterus.* Whenever bipalpation or gentle probing produces pain, even gentle ablutions with tepid salt water must be held in abeyance until the parts have been quieted by local antiphlogistic and calmative treatment; then only may tepid injections, medicated with anodynes, be tried, to be succeeded by the mildest detergents, which are rendered stronger or weaker, or are altered and replaced by others, as circumstances dictate. (Nott).

Should we neglect this imperative rule, intense pain (uterine colic) or sudden collapse is the immediate result, and peritonitis, haematocele, ovaritis, etc., follow in a few hours. "The uterus, like the peritoneum, the periosteum and bones, is insensible in its normal state, but exquisitely sensitive when inflamed." (Nott on Intra-Uterine Medication. American Journal of Obstetrics, May, 1870, fol. 58.)

2d. *There must be present an open os, canal of cervix, and internal os;* if these are not patent, they must be opened by sponge and laminaria tents, incision or dilators. Neither of these can be used when irritability of parts is present; this should be allayed by the means mentioned above. (Nott, Peaslee and Kammerer.)

3d. *A proper instrument is indispensable.* Whatever instrument is used, the injected fluid should be permitted to flow away with ease through the instrument itself, or by the side of it. Authors use various instruments: Peaslee, Kammerer, Noeggerath, Scanzoni and Kiwish use syringes; Tilt and Nott, catheters; with the latter instrument were performed all the injections of the writer.

4th. *The vehicle should be of proper temperature.* Water and other fluids of lower temperature than the body have often produced painful contractions of the uterus; therefore it should be injected slowly, of the heat of the body. Moreover, care should be taken not to inject a liquid which will coagulate in the cavity of the uterus, or in the tube of the catheter; the precaution of carefully examining the instrument immediately before injection and after it, in order to insure its patency, is self-evident; immediate removal of the instrument becomes imperative whenever mucus or blood obstructs either of the tubes.

The double current catheter of Nott cannot distend the uterus, (for the fluid discharges itself as rapidly as it enters), therefore the question, how much or how little should be injected for the purpose of cleansing and medication is not relevant.

To these precautions the writer adds:

5th. That caustic solutions are inadmissible, and must not be used; for they are liable to produce immediate and remote symptoms, prejudicial to the patient and discreditable to the physician. Furthermore, on emerging from the uterus, they collect in the vagina and act mischievously. The writer is aware that eminent men use caustic applications, but they also recount symptoms and phenomena occurring during intra-uterine medication, which he has not experienced when using a graduated course of dilute medication.

The use of Nott's intra-uterine catheter will, however, always be circumscribed, for the following reasons:

1st. With it, mild solutions must be used exclusively.

2d. In order to insure success, it would require frequent injections, which are not admissible in private practice, for they consume the time of the practitioner and the means of the patient. For hospital purposes this instrument is excellent, and should be adopted extensively.

The great merit of Nott in its introduction, is not merely that he has shown that intra-uterine injections are always safe when the above-named precautions are strictly followed; but that he has proved by experiments that concentrated solutions introduced into the uterine cavity either by injection or ingestion, are dangerous; that they are often apparently harmless, only because the secretions of the cavity protect the uterus from harm; or, because the caustic unites with these secretions, and forms inert albuminates.

The writer states, unqualifiedly, that injections practiced with the precautions herein detailed are devoid of the slightest danger and as harmless in their results, in competent hands, as the simplest operation in surgery. This opinion is based on experimental inquiry, and is therefore worth more than the theoretical dicta of eminent men, who have had no practical experience in its performance, and are therefore not competent to express an authoritative opinion.

(The injections performed by the writer were instituted for the purpose of ascertaining, not so much the necessity and appropriateness of uterine injections in any given case; or their superiority over other methods of intra-uterine medication; as the safety of the operation when all avoidable non-indications were set aside).

Finally, the same principles govern uterine injection with those of uterine ingestion, the same hazards are encountered in both cases by concentrated solutions. The writer prefers, with Peaslee, the use of ingestion; for, with Emmet's applicator, cotton wool charged with mild solutions may be left in the womb until they are discharged, without pain or other detriment to the patient. The time will arrive, thanks to Nott and others, when the mucous membranes of the uterus will be treated like the same membranes in other portions of the body, and when sound anatomical and pathological views will govern the practice of intra-uterine medication.

169 Dearborn Street.

ARTICLE IV.—*Delivery of Extra-uterine Fœtus through the Abdominal Walls after four Years.* Reported by J. H. BEECH, M.D., of Coldwater, Michigan.

Mrs. Alexander Jameson came to my office August 12, 1870. She is 28 years of age—living with second husband—a well proportioned woman, weighing about 98 pounds—florid complexion, auburn hair, sanguine temperament—had one daughter, by former husband, now eight years old.

Menses always normal until about four years ago, when she believed herself to be pregnant. About eight weeks after regular menstruation she had a "miscarriage." Attended by her family physician, Dr. R. Bevier, of Plymouth, Ohio, where she then resided. Eight weeks from above accident she thought she felt "quickening," the abdomen and mammæ gradually increasing. From that time she "felt motion," until the period at which she expected labor, and to which time her size increased in normal degree. Some difficulty existed with the urinary organs, which

she supposed grew out of her enciente condition. In other respects she was healthy. Apparent labor came on at the expected time, and the prospect of delivery was not given up for several days. After this period, the size of the abdomen and mammæ diminished, and with the subsidence the abdominal tumor became harder and more movable.

Menstruation returned after a time. She now suffered occasional lancinating pains in the tumor, which had seemed to become more prominent of late. It could now be moved as freely as a short pedicled, ovarian tumor can ordinarily be. It filled the left side of the abdomen a very little more than the right; was not very sensitive, and was even and uniform to external touch and sight. Per vaginam: uterus normal, very slightly inclined toward right of pelvis, and could be moved independent of tumor.

Dr. Frank Buckland was called in consultation. Her opinion that it originated in conception was presumed to be correct; but as the outlines of a fœtus could not be made out, it was believed to be mainly fibrous growth. Its removal being advised, board in the city was engaged, and the time set for the operation in about three weeks, which would be at close of next menstruation. At the appointed time I received a letter from the husband, stating that Mrs. J. was ill of "chills and fever."

More than two months after, i. e., about the middle of November, Dr. J. L. Hagerty, of Jamestown, Ind., informed me that he had been attending Mrs. J. through a very severe fever of typho-malarial character, but which exhibited such eccentricities that Dr. T. McNabb, of Fremont, Ind., had been associated with him in charge of the case. She was now slowly convalescing, and anxious to have an operation before she should get strong enough to ride to Coldwater.

Tuesday, November 22, 1870, visited Mrs. Jameson for operation, Drs. S. S. Cutter and Frank Buckland, of Coldwater, Mich., Drs. J. L. Hagerty, of Jamestown, Ind., T. McNabb, of Fremont, Ind., and H. D. Wood, of Angola, Ind., assisting. Patient feeble, but resolute; abdominal walls drawn tightly over resisting mass, which presented but one elastic point, that was about three inches from umbilicus, on a line towards anterior superior spinous process of left ilium.

The patient and friends desired, and received, a promise that if

unusual danger presented, the operation should cease, and whatever wound had been made be closed.

Anæsthesia having been produced by chloroform, an incision in linea alba was made about eight inches long. The omentum majus was found adherent to the anterior wall of the abdomen, and by its posterior surface to the entire front of the tumor. Avoiding the conspicuous bloodvessels, an incision was made through the anterior portion of the omentum and the abdominal walls pushed back of the mass, which could not be raised in the least degree from the pelvis. A trocar and canula were plunged into the elastic portion, above mentioned, and about f℥ij of thick, grumous, purulent fluid were evacuated. Evidence of dangerous prostration appearing, as sudden sinking of the pulse, gasping respirations, extreme pallor and shriveled surface, it was unanimously agreed that the abdomen should be closed without further operative efforts; Drs. Cutter and McNabb giving their entire attention to efforts at resuscitation of the p atient. Drs. Wood, Hagerty and Buckland rendered most efficient and expeditious service in bringing forward the abdominal walls, and the wound was made secure with interrupted sutures and adhesive straps. Scarcely any blood had been lost, or serum discharged.

Dr. Hagerty subsequently informed me that the prostration continued in extreme degrees for fourteen hours. Pulse at times could not be counted; vomiting and retching severe, followed by eructation for several hours.

The pulse came to 135, when irregular chills came on, but subsided under the use of narcotics, tonics, preparations of potassa, and local detergents and antiseptics. Suture pins were removed on the fourth, fifth and sixth days.

A considerable portion of the wound healed by first intention; but a space opposite the puncture made with the trocar remained open.

Dr. Hagerty leaving for Chicago, some two weeks after the operation, the patient was placed in the care of Dr. T. McNabb, of Fremont, Ind., who pursued the same general course, and had the satisfaction of establishing permanent convalescence.

Dr. McNabb leaving for Ann Arbor, some three weeks after the time when he took charge of the patient, she came under the care of Dr. H. D. Wood, of Angola, Ind., who continued the same general course of treatment for some time.

The communication between the track of the trocar and the unclosed portion of the external wound becoming more direct and patulous, Dr. Wood was enabled to reach with a probe crepitating surface, which he correctly diagnosed as fœtal bones, and on the 24th day of January, 1871, assisted by Dr. I. K. Dunning, of Angola, Ind., (under local anæsthesia by æther spray), enlarged the opening, and removed a partially decomposed fœtus, weighing about seven pounds, of male sex.

I have delayed the report of this interesting case, for an answer to a communication to Dr. Wood, asking for details of the final operation, but have received none. From the husband and from Dr. Hagerty, who, on his return, resumed charge of the patient, I have learned the essential facts, and that convalescence has been steady. She menstruated April 20th; some menstrual flow passing through the external wound. Menstruated again at regular period, showing no color or unusual discharge through the wound. She is now attending to some household duties, although there is still a slight discharge from the external wound, which is about three lines in diameter, and when injected will hold about f℥ij.

ARTICLE V. — *Case of Sub-acute Colitis, with Suppuration.* By JAMES S. WHITMIRE, M.D., Metamora, Ill.

A. E. J., aged 24, called at our office March 1, 1871. He is now employed in a dry goods store in a neighboring town; but previous to his entering this establishment, he had been clerking for several years in a retail grocery store in this place. He is now complaining of a steady aching pain in the hypogastrium, extending to the left flexure of the colon. He complained of great aggravation of the pain on steady pressure with the hand over this region, and more or less borborygmi were induced by manipulation over this region.

His stools were very much too frequent and thin, but not specially liquid, excepting just at the close of defecation; and a great quantity of thick tenacious mucus was present in every evacua-

tion, and very often this mucus was streaked with blood, no great amount, however, being passed at any one time. He said that he had been thus affected for about three or four months, and had, by this time, though under the care of a physician, become very much emaciated and anemic, having, in this time, lost thirty lbs. in weight.

Finding himself continually losing rather than otherwise, he removed his quarters to a friend in this vicinity for rest and treatment. We diagnosed sub-acute inflammation and ulceration of the left and, probably, the whole transverse colon. Prognosis:—recovery, if complete, will be very tedious.

We prescribed at the first a dose of castor oil to carry off the contents of the bowels, to be followed with a powder composed of bismuth sub-nit. gr. xv., pulv. ipecac. gr. j, to be taken every four hours during the daytime; also a mixture composed of

℞

Spt. Nit.,	℥ss.
Carbolic Acid,	gr. xv.
Ol. Terebinth.,	℥jss.
Glycerine,	℥jss.
Mucil. Acaciæ, Elixir Paregoric,	āā ℥j.

M.

Of this mixture he was to take one teaspoonful, in water, between each powder; the directions being that he must take the powders five times and the mixture four times per day. We also ordered six drops of the oxy-sulph. of iron, with sulphate of quinine dissolved in it, three times per day, in water, at regular meals. This iron mixture is simply a solution of sulphate of iron in nitric acid and water. A strict regimen was enjoined, without which, I assured him, all treatment or medication would be useless; hence, beef soup, with rice boiled with it, was to be his exclusive diet till otherwise ordered; none of the rice, however, was permitted to be taken, excepting so much as naturally strained through a cloth. On this treatment and regimen I kept him for eight or ten days, when we found that his stools were becoming more consistent and less frequent. We now made the same prescriptions, and continued the regimen, excepting that we allowed a medium-sized roast potato at dinner and a soft-boiled egg at breakfast. The beef soup was permitted at any time

during the day when he was hungry or required drink. In about twenty days from the commencement of treatment we added gr. iij. of exsiccated sulph. alumin. to the powders, and continued the same course in regimen, etc., lessening the number of the powders to four per day, and consequently the mixture to three doses. This course was pursued for, probably, twenty days longer, when our patient was discharged cured and able to attend to his usual occupation.

Externally, along the course of the tenderness, from the commencement of the treatment, we used pustulation by means of ol. tiglii one part, and ol. terebinth. three parts, so as to keep the skin quite sore.

After the fæces began to assume some consistency, we often gave a laxative to mildly clear out the alimentary tract; for this purpose we preferred a decoction of rhei, zingiberis and bicarb. sodæ. We perceived, from time to time, as the case progressed, that the thick, tenacious mucus grew less and less; often, however, this mucus would completely envelop a lump of fæcal matter unconnected with the rest, which evidently had been formed in one of the pouches of the colon, and in that place had received its coating.

One of the points in this case is, that this young man had been tortured and racked with pain, and become so emaciated as to incapacitate him for business; yet his case was successfully treated without the least particle of opium or its preparations, save the little that was in his mixture in the form of paregoric; showing clearly, to my mind, that the carbolic acid and bismuth, used in the prescription, had a decided anæsthetic effect upon the mucous membranes with which they came in contact, independent of any other curative agency that they may have exercised in the process of cure. The excess of nitric acid in the iron mixture, probably yielded a favorable influence in the speedy and final termination of the case. This young man, no doubt, had contracted the disease from the habit of eating sugar, crackers, cheese, etc., between meals during the years that he stood in the grocery store; thus keeping the stomach constantly at work so as to produce debility of that viscus, and, hence, imperfect digestion for a long time; consequently, the food taken, instead of being properly assimilated and taken into the system for necessary repairs, became a

source of irritation, and occasioned the state of things we have described; and more especially the sugar, taken at all times, producing a tendency to acidity in an enfeebled stomach, instead of being assimilated and converted into fat, either to be deposited in the tissues as a healthy organism, or taken into the circulation to keep up the normal animal temperature.

ARTICLE VI.—*Case of Hepatic Abscess, involving the Gall Bladder, successfully treated, by injections of solutions of Iodine.* By J. A. GOLDSBERRY, M.D., Annapolis, Indiana.

June 16, 1866, I was called to see Hon. S. T. E., who had long been a sufferer from an abscess. He gave me the following brief history of his case:

On the 2d day of March, 1863, while at his place of business, (merchant) he was suddenly seized with an excruciating pain in the right side, just beneath the short ribs. The pain was deeply seated, and so severe as to render him, in a short time, almost helpless. There was soon noticed some enlargement of the liver, and in about two weeks from the day of the attack, there was observed a "*bulging*" in the iliac region of the right side. The pain was now of a gnawing or throbbing character, accompanied by violent rigors, alternating with flushes of heat, and some gastric irritation. After two months of terrible suffering, which had made sad havoc on a constitution naturally strong and powerful, there was discharged externally, a very large quantity of horribly fetid pus; this relieved materially, for the time being, the local symptoms, but so profuse was the daily discharge of matter, that for long weeks and months death seemed imminent almost hourly. In the meantime, pus burrowed among the abdominal muscles and sought new outlets. At the end of the sixth month, hydrothorax and a general dropsical condition supervened, which sequela, it was thought, rendered the case hopeless in the extreme. At the end of the first twelve months of his affliction, his *general* condition was thought to have improved a little; no amelioration, how-

ever, in the local trouble. Pus now passed out through three openings: one, the original outlet, situated about one inch to the right of, and three inches below, the umbilicus; one, a little below, and to the right of, this; and a third through the umbilicus itself. From this time up to the period when I was first called to see him, there was but little change in the local or constitutional condition.

Condition of patient on my first visit: Closely confined to his bed, and nearly helpless; very much emaciated; extreme debility; appetite capricious—sometimes voracious, at other times entirely wanting; bowels constipated; pus *occasionally* flowing through the umbilicus, and *constantly* from an opening situated just *above* Poupart's ligament, and about midway between the anterior superior spinous process and the spine of the pubes; the two other outlets spoken of having closed up sometime previous. Surrounding, and completely hiding from view the orifice of the lower sinus, was a large mass of fungous flesh, always highly sensitive and, at times, exceedingly painful. A sallow and jaundiced condition of the eye and skin; the features wan, worn and haggard, every lineament of the face expressive of the extremest physical suffering. Abdomen tympanitic, and the whole of its right side, from the upper margin of the hypochondrium down to the inguinal region, sensitive to the touch and painful on pressure. Condition of the kidneys apparently normal. He had just passed through a terrible paroxysm of pain, to which he was frequently subject, caused by the temporary closure of the orifice of the lower sinus. He informed me that, for three years and three months, he had been a sufferer; that through most of this period he had been under medical treatment; that his case had been examined by a number of medical gentlemen, and that, from time to time, he had had the benefit of superior medical advice; that life in his present condition was a burden; that though he had long since given up all hope of recovery, he thought it possible that something might be done at least to *mitigate* his sufferings, and smooth, to some extent, his pathway to the grave. He was willing, he said, to submit to any kind of treatment, however painful or unpleasant it might be, if there was a prospect of affording even *temporary* relief.

I learned that there had been a difference of opinion among the medical friends who had seen and treated the case, as to the real nature of the ailment. Some regarded it as a case of hepatic

abscess, whilst others insisted that the disease originated in the lumbar vertebræ. After having carefully examined the case, and after having listened to my friend's very intelligent account of it, taking the following facts and symptoms connected with its history into consideration, I was led to the conclusion, that, whatever might be, or might have been, in the progress of the disease, its complications, and however serious in their nature, I had before me, primarily, at least, a case of abscess of the liver.

The patient was fifty-two years of age, of a sanguine-nervous temperament, and up to the present trouble, had all his life enjoyed remarkably good health. He was one of a large family, and all had been singularly free from diseases of a hereditary character; his parents were both living, healthy, active and vigorous. There was certainly present no hereditary taint, no tuberculous diathesis. The attack was *not* slow, gradual and insidious, as is common in spinal disease; no previous lameness; no soreness, nor even pain in the lumbar region; nor was the discharge, at any time, of that character which we find in diseases of a strumous nature; on the contrary, we find present several very valuable diagnostic signs in favor of hepatic abscess, viz: the manner of attack, being stricken down suddenly, in the midst of good health; the *locality*, intensity and character of the pain, enlargement of the liver, difficulty in breathing, and inability to lie on the left side. Of course my prognosis was as unfavorable as it could well be, and I frankly told my friend that his recovery was not at all probable, but that, in my opinion, something might be done to bring about, at least, *partial* relief, and thereby render his condition a little more comfortable.

Having informed him what would be my course of treatment, that it would necessarily be protracted and painful, and, after all, the result very uncertain, he promptly signified his willingness to submit to it, and insisted that I commence at once. Considering the fact that he had been subjected to a long course of constitutional remedies, indeed that the treatment had been almost *exclusively* constitutional, and being quite well satisfied that the disease was local in its nature; that it did not depend on any hereditary vice; that there was not now, nor had there been, any spinal trouble, no caries of the lumbar vertebræ or pelvic bones, but that the starting point was in the liver itself, and that in all probability

there was still a serious lesion there; the intestinal lesion, for such there was, evidenced by the passage through one of the fistulous tracks of a very large ascaris lumbricoid; the hydrothorax and anasarca, which existed in the early history of the case; the frightful destruction wrought among the abdominal muscles, the consequent debility and prostration, were all, so to speak, children of one common father, all drawing their nourishment from the same foul and contaminating source; hence I decided that my treatment should be addressed mainly to the local difficulty. The first step in the treatment consisted in removing from the orifice of the lower and principal sinus, the mass of morbid growth which seriously obstructed the free exit of matter, and which, for months, had been the source of indescribable suffering.

This I accomplished in the course of ten days by the daily application of argenti nitras. The orifice being fully exposed, I explored the sinus with the common silver pocket probe, carrying it upward and backward to the depth of four inches, when I encountered resistance of a soft, yielding nature, and found it utterly impossible, in all my subsequent explorations, to pass the probe beyond the point first reached. I was not induced, however, by this fact to even *hope* that I had arrived at the bottom of the canal, but was of the opinion, which the future history of the case painfully confirmed, that still farther upward and backward was to be found the real source of danger. I was now ready to begin the treatment proper, and though it extended through a period of many weary months, my therapeutics was exceedingly limited and simple.

For the first week I contented myself with injecting into the fistula, twice daily, tepid water, cleansing the track as thoroughly as possible. I substituted for this a weak solution of chloride of sodium, gradually increasing its strength, until more or less pain was produced. After having tested, as far as I could, the capacity of the sinus, and of the patient to *tolerate* the use of injections, I began the use of iodine, the remedy on which I expected to chiefly rely in my future treatment of the case, and in the use of which, I expected to succeed or fail in relieving my patient. The preparation employed was "Lugol's" solution, consisting of four grains of iodine to one pint of distilled water, and double the quantity of iodide potassium.

That I might now reach, if possible, with my injections, the source of the fistulous track, I prepared a small caoutchouc catheter; cutting it to the desired length, and clipping off the blind extremity, I passed it into the sinus to the distance of three and a half inches. I was not surprised to find that this procedure *increased* the *capacity* of the canal, that is, that I was thus enabled to throw the solution beyond the point previously reached. Prior to the introduction of the catheter, not quite two drams of fluid would fill the canal, *now* a half ounce was readily retained. The iodine injections were followed up once daily, for a period of six weeks, at the end of which time, the improvement in the case becoming so marked, I used it every second day.

About two months after taking charge of the case, I was not a little surprised, and, I might add, somewhat alarmed, on calling upon my patient, to find flowing from the fistula, what appeared to be, and which a close examination proved to be, *bile*. This was, to me, a new feature in the case, though my patient informed me that he had noticed a discharge of a similar character before, and that he had observed it, for the first time, three or four months before my connection with the case. Of course, there could not longer be any doubt as to the true source of the abscess. Doubtless the disease in the liver was extensive, and embraced that part of its under surface in relation with the upper surface of the body of the gall bladder.

During the long suppurative process in the liver, inflammatory action was set up in the wall of the gall bladder, resulting, by ulceration, in a perforation of its coats, hence, the presence of bile. It might be proper to say that the discharge of bile was not *constant*, but occurred only at intervals of every three or four weeks, and lasting each time from one to two days. I now increased the strength of the solution one-half, and continued to use it once every second or third day, up to the middle of November, the case having been in my charge about five months, at which period a small quantity of bile passed through the sinus *for the last time.*

The condition of the patient at this time was indeed encouraging; his general health had greatly improved, and the local trouble gave signs that were flattering and hopeful. He had dispensed with crutches, which he had been using for several weeks, and

with the assistance of a cane, was now able to walk about the streets. The fistulous track was slowly but *constantly* contracting, evidenced by its diminished capacity and the necessity of substituting for the catheter used until now, one of less size, and the quantity of matter discharged was decreasing daily. The patient complaining but little from the injections, I now quadrupled the strength of the solution first used and employed it in this strength, once or twice every week, until, by reason of the gradually diminishing calibre of the fistula, it became impracticable to any longer introduce the syringe.

Sometime in the month of June, 1867, about one month after the last injection, and twelve months after treatment by their use commenced, all discharge ceased, and the fistula finally closed. A few weeks after this event, which I had labored and waited for with no little solicitude, and that my long-suffering patient so much desired to realize, he was suddenly attacked with a very severe pain, originating in the right hypochondrium, but soon locating itself in the stomach. The attack seemed to be of a neuralgic character, was attended with free emesis, and lasted from two to three hours. This was soon followed by another of like character, and for the next six months, at intervals of one, two or three weeks, these frightful and distressing paroxysms continued to come up, telling fearfully on his general health, and creating a good deal of anxiety in the minds of patient, friends and physician, as to the ultimate result. But with their cessation, the system promptly rallied, and soon regained all it had lost. Since that time the health of my friend has been excellent; his capacity for labor, both physical and mental, and his powers of endurance, are but little impaired. One, familiar with the severe and protracted struggle through which he has passed, to see him now, the very personification of good health and vitality, moving about with the freedom and facility of a sprightly boy, must be impressed with the fact that he is a striking example of the truth of that proverbial saying, "as long as there is life there is hope."

BOHEA-MIANS.—The feminines who tease for admission to "mixed clinics." In case of refusal, "*Gunpowder*" is threatened.

ARTICLE VII.—*Hypodermic Medication.* By T. CURTIS SMITH, M.D., Middleport, Ohio.

My excuse for this article is a desire to extend the knowledge and use of a very valuable means of treating many diseases. There is no method of treatment now in use as highly beneficial as this in painful and spasmodic affections, as well also as in many not of this class.

HISTORY.

Hypodermic medication was first discovered by Alexander Wood, of Edinburgh, in 1843. He was led to this discovery *First*, by being strongly impressed by Valleix' theory of there being four points in every sensitive nerve, more liable to be affected by neuralgia than any other portions.*

1st.—The point of emergence from its long encasement.

2nd.—When it traverses the muscle.

3rd.—Its peripheral termination.

4th.—When it approaches nearest the surface of the body.

The second step that led him to the discovery was the invention and use of an instrument to inject *nevi*, by Ferguson. Wood, believing neuralgia to be a local disease, it ought to be treated locally. He immediately devised an instrument to prove his theory, and had not long to wait before an opportunity offered to test it. "An old lady 80 years of age, the subject of cervico-bronchial neuralgia, was his first patient. An injection of thirty drops of vinous solution of morphia, on the shoulder at the sensitive point, gave almost instant relief, and soon put her to sleep. Next morning she was still asleep, but easily aroused. The one injection, although it caused at the time considerable alarm, entirely cured the patient of the neuralgia."†

After this, in and around Edinburgh, the hypodermic use of some preparation of opium was frequently practiced. Wood believed it necessary to localize the remedy to make it effectual for the relief of pain, though he recognized the systemic effects of the remedies thus applied. His first publication on the subject

* Gallaher, N. Y. Journal for May, 1871, pp. 532–3.

† Gallaher, N. Y. Jour. Med. May, 1871, p. 533.

was in 1855, twelve years after its discovery. His priority was disputed by* Rynd, of Dublin, for himself, and by the friends of Kurzak, of Vienna, for him. The theory of Wood and "the discovery of the practicability and utility of introducing medicine under the skin for the relief of local pain,"† and that it must be *locally applied*, constitutes the first period in the history of "Hypodermical Medication."

This theory remained undisputed until 1859, when Charles Hunter, of London, published his first paper, entitled "Experiments Relative to the Hypodermic Treatment of Disease."‡ He originated the term *hypodermic*, which is the one now generally used, though the term subcutaneous is perhaps equally proper. Hunter demonstrated "that the physiological and therapeutical effects of medicines thus administered are procured through the agency of the blood, and that § localization of the injection is not necessary."

Great praise is due to Wood for the discovery, and equally great to Hunter for his untiring efforts to extend the use of the remedy to the relief of a greater range of diseases than it could possibly have been under the localization theory of Wood. From 1855, and especially after Hunter's paper in 1859, the *hypodermic* method of administering remedies spread rapidly over Europe, and to this country. Courty and Behier, in France; Scanzoni, of Wurtzburg; Oppolzer, of Vienna; Graefe, of Berlin, and others, brought the remedy into use in their respective countries.

The first ‖ account I can find of its introduction into this country, *was in* 1858, by the late Prof. Geo. T. Elliott, of New York,¶ who introduced into Bellevue Hospital, the use of morphia hypodermically "in the treatment of sciatica." Since 1859, it has rapidly advanced in frequency of use, and the number who use it, but Austin states it to be "still very much unappreciated," and states further "there are still many practitioners who will not

* Bartholow, Hypo. Med. pp. 13-4.

† Bartholow, p. 13.

‡ Bartholow, Hyp. Med. p. 15.

§ Bartholow, p. 13.

‖ Bartholow believes it was first used by Ruppaner, of Boston, in 1860. See p. 18.

¶ R. B. Maurey, Amer. Jour. Med. Sci., Oct. 1866, p. 373.

admit that there *can* be any particular advantage in it which the old way of giving medicines does not offer."* Similar prejudices exist in this country. Those who employ the hypodermic method are largely in the minority. Some oppose it because it is an innovation upon an old method; others, still, unacquainted in a *practical* way with the mode of using it, are afraid of its power. Besides its first use by Elliott, we have in this country articles from Ruppaner,† Storer, and Warren, of Boston; Reeves, McElroy, and Bartholow, of Ohio; Catlin, of Connecticut; Dickson, Hutchinson, and Mitchell, of Philadelphia, besides others in various parts of the States.

ADVANTAGES OF THIS METHOD.

There is perhaps no one who has given this method a fair and general trial, who will fail to speak well of its value as a means of treating many and various forms of diseases, and as being superior to the old stomachic method of administration in VERY MANY INSTANCES.

Gallaher, of Pittsburgh, Pa., states:‡ The hypodermic method of giving medicines is now so well established that no practitioner of any standing will denounce it, or refuse to avail himself of its advantages. Our periodicals, from every source, "are teeming with its triumphs," and men in the profession, high and low, throughout nearly every part of the world, are rapidly extending its usefulness, and the breadth and utility of its application in disease and for experimental purposes. Among its advantages may be named: 1st, and probably least, economy of medicine, which can only be an object in case of very high price, or great scarcity of an article. 2nd. Rapidity of action. The full effects of a remedy are manifested in from five to twenty minutes. This is a great object in very painful or severely spasmodic diseases, as colic, cholera morbus, neuralgia, congestive chills, convulsions, etc. 3rd. Intensity of effect. The intensity is greater, because the whole portion influences the nervous system, within a short space of time, compared with absorption by the stomach. 4th. The certainty of action. This is a *great object in any remedy.*

* Practitioner, July, 1868.

† Bartholow, p. 18.

‡ N. Y. Med. Jour. May, 1871, p. 535.

When a remedy is thus administered it is next to impossible for it to fail to act. It is placed in immediate contact with the absorbents and capillaries, and must, almost of necessity, be carried into the blood, which is the medium of its action on the nervous system. 5th. Greater permanence of effect. Instances are recorded of diseases neuralgic in character, having resisted the internal use of remedies for years, being permanently cured by a few hypodermic injections. Wood's first patient was entirely cured by one injection. One obstinate case of frontal headache, treated by myself, has remained cured for near two years, though but one injection was used. Another case of cephalalgia was relieved eight months by one injection, and eighteen months from a second. Of the permanence, Dr. Austin * says "the advantages of morphia, hypodermically administered, over the opiate medication by the stomach, are such as would be *a priori* incredible, nor can they yet be fully explained. In particular, it is impossible to account for the far greater permanence of its action in relieving nerve pain, which is so marked as that its discovery has initiated a new era in the treatment of neuralgias." 6th. Purity in the action of a drug. By this method a drug cannot be changed in character, as it often may be in the stomach or in its passage along the alimentary tube, by actions or reactions of the natural or morbid secretions with which they come in contact. No† such failure can occur in the therapeutic action when they are injected into the cellular tissue. 7th. The facility of affecting the system in cases where, from irritability of the stomach or rectum, the remedies cannot be retained, or, if retained, the morbid condition of the viscera prevents the absorption of the remedy, or the secretions to some extent neutralize it. 8th. Safety of the method. It is perhaps as safe as any method of administering remedies, when proper caution is used. Prof. Naussbaum,‡ of Munich, was injected 2000 times, before any accident occurred, and this probably from injecting a vein, and not fatal. Gallaher mentions a physician in Pittsburgh, who has been operated on over 1400 times, without the occurrence of an unpleasant symptom beyond the production of two "pustules." Another under his care in

* Bartholow, pp. 53–4.

† Gallaher, N. Y. Med Jour. May, 1871, p. 537.

‡ Gallaher, N. Y. Med. Jour. p. 536.

which he had used over one hundred injections without *any* unpleasant symptoms. Dr. Charles Hunter, in his remarks before the Clinical * Society, of London, reports an annual experience of over 2000 cases, without observing any risk in the method, "whether there was disease of the *heart* or not." Graefe has † injected the temporal region hundreds of times. Dr. Wood made over one hundred injections in one patient. Eulenberg used it in one case *four hundred times*, without meeting with a single instance of unpleasant results. I have myself used it several hundred times in different patients. *Thirty* times being the most in any one case, and have *never* noticed any serious effects from it yet. 9th. Saving of strength, or, as Hunter has it,‡ avoidance of exhaustion. This is an important advantage, for in cases of extreme pain, or spasm, the sooner it is cut short the better the chance for the patient. This may be instanced where the jaws are closed *spasmodically*, *preventing stomachic administration*, or when the *shock from the pain is so great that the system fails to respond quickly to remedies given by the mouth.* Cholera, colic, and tetanus, are examples of this. But these conditions do not prevent the rapid absorption and effects of the remedy *hypodermically administered.* Who of our readers has not seen cases which he knew he could snatch from the jaws of death if he could only get his remedies to act before the powers of nature gave way? In such cases, this is *the remedy with which to save, if not life, certainly a vast deal of suffering.* 10th. The advantage of the absence or avoidance of the unpleasant symptoms that often follow the stomachic administration of some medicines. This is certainly very marked in many cases, and Hunter argues that the avoidance is still more complete by inserting the remedy at a distance from the seat of pain. I have found many cases to whom I dared not give morphia by the stomach, but, nevertheless, complained very little from its hypodermic use. But as a rule, in my hands, the effects have been quite the same as by the stomach, but as I have usually practiced the use of the remedy locally, it may be, as Hunter charges, that this caused the ill effects of vertigo,

* London Lancet, March, 1871, p. 161.
† Amer. Jour. Med. Sci. April, 1866, p. 429.
‡ Am. Jour. Med. Sci. July, 1865, p. 207.

nausea, etc. 11th. Saving of time to the practitioner. This is often a great object when pressed with business or urgent calls. The difference between relieving the patient in five minutes by this method, and waiting from one-half to two or three hours for relief from pain by the old method, is frequently no small item of advantage.

There can be no question that the administration of remedies by the hypodermic method of introducing medicines into the subcutaneous cellular tissue is one of the most important additions to our remedial resources, that we have lately acquired.

As* a means of relieving pain, it rivals even the inhalation of chloroform in certainty, and rapidity of action, and surpasses it in permanency of effect, while it is comparatively free from objections which might be made in regard to dangers of fatality or slighter ill effects.

DANGERS.

Like other powerful means of relief, it will prove dangerous when improperly used. As in entering a vein, or in using too large a dose, from which sudden prostration, nausea, vomiting, excessive itching, painful abscess, or even death has been caused by its use. But these are never known to occur when due precaution is taken. *It is my opinion, based on careful observation, that the injection of a vein can quite invariably be avoided by inserting the needle one inch under the integument into the cellular tissue, and then before injecting the solution,* WITHDRAW THE POINT OF THE NEEDLE ONE-FOURTH OR ONE-HALF OF AN INCH, *then raise the integument with the needle, holding the instrument parallel with the surface into which it is inserted. By this precaution, the vein if punctured will be pouring out its own blood, and will, therefore, not be able, by any possibility, to carry the solution directly to the heart. The only exception I can conceive to the success of this variation would be when the needle happened to traverse the course of a vein for the last quarter or half inch of its course* UNDER *the skin.* CERTAINLY A RARE OCCURRENCE. *But even if a vein should thus be entered, the little force employed to elevate the integument with the needle, would rupture the thin walls of so small a vein, thus allowing it*

* Amer. Journal Medical Science, April, 1866, p. 427.

to pour out its own blood into the cellular tissue, and while this is taking place, the surrounding CAPILLARIES *and* ABSORBENTS *will take up the solution, leaving the poured-out blood the* LAST TO BE TAKEN UP. *I have never seen this direction to avoid injecting a vein given by any authority,* BUT CONSIDER IT OF VITAL IMPORTANCE THAT THIS PRECAUTION BE STRICTLY OBSERVED.

Professor Naussbaum,* after injecting himself over 2000 times, injected the medicine (2½ *grs. morphia,*) into a subcutaneous vein. This was followed by very great prostration, from which he recovered. For myself, I have never seen any symptom more unpleasant than that of occasional nausea, vomiting, vertigo, and itching of the skin and nose. All of these, except the latter, are quickly relieved by bromide potassium, given by the stomach, or injection.

Morphia is, perhaps, more fruitful of these ill effects than any other remedy, it having a physiological tendency to produce them, and being used more frequently than all other remedies combined.

Drs. Southey and Duckworth† each relate a fatal result. The former from 1-6 grain of Sulph. Morphia, in a case where the heart was seriously diseased. Dr. Hanfield Jones‡ relates in brief, three cases in which the remedy was followed by serious fainting. In these he thought there was serious disease of the valves or muscular tissues of the heart. Gallaher§ mentions a case in his experience, where severe prostration was produced, lasting twenty-four hours. In nearly all of these cases a vein seems to have been entered.

PHYSIOLOGY.

Remedies admitted subcutaneously have quite the same physiological effects as when given by the mouth. Their effects, however, are *more powerful* in the same *sized doses in the former than in the latter*, and in some instances differ in kind.

A scientific‖ committee appointed by the Clinical Society of London, to report on the physiological and therapeutical effects of remedies administered by this method, gave it as their opinion,

* Am. Jour. Med. Science, June, 1866, p. 240.
† London Lancet for March, 1871, pp. 161-2.
‡ Ibid.
§ N. Y. Med. Jour. May, 1871, p. 537.
‖ American Jour. Med. Science, Oct. 1867, p. 537.

that no difference has been observed in the effects of a remedy *thus given*, and by their *introduction into the stomach, except greater rapidity, certainty and intensity of effect, and requiring a less amount to affect the system than when given by the stomach.* There were, however, some exceptions to this rule. When quinia was injected into the cellular tissue, considerable elevation of temperature was observed. This symptom being slight or inappreciable when the drug was taken (in the same quantity) by the mouth or rectum. "A solution of podophyllin injected under the skin gave rise to free diuresis, a symptom which was characteristic of this method of administering the drug."

I have occasionally noticed nausea, and in nearly every case some degree of constipation produced by morphia. This latter is probably caused by the sedative action of the drug on the nervous system, as it would be impossible for it to have any astringent power over the mucous lining of the alimentary canal, when given hypodermically. There are, however, many statements to be found from good authority, to the contrary of this opinion.

THERAPY.

Remedies introduced into the system by the stomach, are often affected by the condition of that organ, or those organs annexed to it, as by inflammation, congestion, repletion of the veins, ingesta and character of the gastric juice. The condition of the liver, spleen and pancreas also produce some effect upon the action of the drug. The same may be said of the condition of the mucous membrane of the alimentary tube beyond the stomach. These conditions may be such as to prevent the absorption of a remedy, or to so far alter its character by chemical action, as to entirely change its therapeutic action on the system. I have many times found the stomach in such a morbid state as to fail to absorb either *morphia or opium.* The same may be said of other drugs. Besides, the use of remedies of the narcotic class may so far depress the nerves of the stomach, as to greatly limit the rapidity or extent of absorption, thus limiting the power of the remedy, or rendering its absorption so slow, as to quite prevent any noticeable effect. On* the other hand, when a medicine suitable for this purpose is thrown under the skin, its physiological and therapeutical effects

* Bartholow, p. 29.

are produced in the fullest degree, and in the most characteristic form. Bartholow says: "It follows then, that the therapeutical powers of a drug must not only differ in degree, but also in kind, according as it is given by the stomach, or injected under the skin. The subcutaneous use of certain drugs has developed very valuable therapeutical properties, which the stomachic administration had not even suggested. This is demonstrated by the effects of podophyllin,* and other drugs given *subcutaneously*. The *advantages* of this method have been treated of before. (See *ante*.) But I shall again ask attention to one point, the seventh in the list, viz., The facility of affecting the system in cases where from a morbid condition of the stomach or rectum, or from the power of absorption being checked by severe shock from injury or very *extreme* pain, the remedy fails to act, when given by the usual method. We have all seen such cases. I will relate two in brief, from among others that might be added.

I was called hastily one morning to see a gentleman who was suffering from an extreme attack of cholera morbus. Not having any syringe, I used autacids, opium, morphia, hot drinks, stimulating counter-irritants, heat, etc. Being obliged to leave to see others, these were ordered to be continued till relief was afforded. Two hours later a messenger announced that the man was no better, and that he was sinking rapidly, and would die if not relieved. I assured him that the man should be relieved in a few minutes. On reaching the house I found the man cramping from head to foot, pain excruciating, could perceive no pulse at the wrist, and the extremities were cold, surface bathed in a profuse cold sweat. I immediately injected a half grain of morphia sulph. In ten minutes the effects of relief were very apparent, in twenty minutes the man was easy and asleep. The vomiting and purging immediately ceased. This case, in the times of epidemic cholera, would unhesitatingly have been pronounced an instance of that fearful disease.

Case 2.—I was called last summer to see a lady, who was suffering from very extreme ovarian neuralgia. She was not one who complained for nothing. I think she was in as much

* Of 30 or more injections of podophyllin which were administered, only one produced any morbid diuretic effect, and that was, probably, a mere coincident.

agony of pain as any one I ever saw. I used opium and quinine largely; then morphia, chloroform, heat, stimulants and counter-irritants, for three hours, without the least appreciable effects. Prostration seemed to be approaching. I sent for the hypodermic syringe, and gave 15 M.'s Magendie's Solution Morphia. In 15 minutes she was much better, but still suffering. I then gave 10 M.'s more, and in five minutes she was quite easy and sleeping. I should have stated that morphia was administered per rectum to the extent of one grain, but no effect seemed to be derived from it. Fearing narcotic poisoning from the large quantity of opium in the *stomach*, I gave an emetic of zinci sulphas, and a very large injection of warm water, per rectum, which latter moved the bowels freely, and the former producing free emesis. As I expected, the opium quite unchanged, mixed with an abundance of glairy mucus, was thrown off in the act of vomiting. This lady was not an opium eater.

Other cases could be named, but it is needless to do so; these quite representing the very great advantages of the hypodermic method. I seldom go about now without my hypodermic instrument with me, having as I believe lost one case at quite a distance from home, for want of it.

The committee appointed by the Clinical Society of London, state, "That* no difference has been observed in the effects of a drug subcutaneously injected, whether it be introduced at a distance or near to the part affected." Others, high in authority, express the same opinion. From this view it may seem absurd for one occupying a position as humble as I do, to dissent. But in a certain class of cases where the pain has been *long* and *immovably seated in one location*, *the remedy locally applied is certainly more effectual* than when administered at some distant part. Drs. Ruppaner, of New York; Eulenberg, of Berlin; Behier and Lorent, of France; Gallaher, of Pittsburg, and especially, Wood, of Edinburg, maintain that localization *is often followed by better and more permanent relief than when injected at a distance.* Eulenberg states that in a case† of double rheumatic sciatica, observed by him, *complete relief* of pain, for a space of from two to three

* Am. Jour. Med. Science, Oct., 1867, p. 531.

† American Journal Med. Science, April, 1866, p. 432.

days, followed each injection *upon the side upon which the injection was made.* While upon the other side, the pain *immediately returned*, upon the subsidence of the effect of the narcotic upon the nervous centres.

The reasons for localization are: 1st. The injection influences the nerves of the part injected, producing a partial local anæsthetic effect of considerable permanence, sometimes lasting for several days. 2d. The local shock attending the operation tends to break up the established habit of local morbid influence. 3d. In addition to the local influence, the part receives also its share of the systemic effects, thus giving the one locality a double effect, and hence more power over the local disease. I have already cited two cases in which the remedy, applied locally, had a most happy effect, while I had no reason to expect permanent good from it if injected at a distance, (see *ante*) (two cases head pain.)

The diseases in which this remedy has been beneficially used are numerous. Among them we may especially place those severely painful and spasmodic, as well as many that are of cerebral origin, as mania, melancholia, delirium tremens, etc. And of the digestive organs, as sea sickness, excessive vomiting, colic, intussusception, etc. These should be treated under the head of Special Therapeutics, but space and time will not allow more than a brief notice of a few diseases, after which I shall describe the instrument, manner of using, and formulæ for some of the leading remedies used by this method, then close this already lengthy article. I will give a very few of the many cases in which I have used the hypodermic method of treatment.

Case 1.—On the 6th day of August, 1869, I was called to see Mr. Mc., who was suffering from a severe attack of pleurodynia. I injected, over the pain, six minims Magendie's Solution. In five minutes he was relieved without a bad symptom, though he could not move or even breathe without severe pain.

Case 2.—Was called on the night of Sept. 1st, 1869, to see Mrs. T., suffering severely from cholera morbus. Everything administered, even water, was immediately rejected. I administered one-sixth of a grain of morphia, under the skin. In ten minutes the pain and vomiting all ceased, and she was cured without a bad sequence.

Case 3.—Mr. M. who frequently had attacks of colic, as well

also as his wife, always requests its use, in preference to waiting for the old slow plan of treatment. It has generally relieved them in from eight to ten minutes.

CASE 4.—Mrs. R. was awakened one night by a terrible pain in the shoulder, caused by muscular spasm; she could not move without great pain, and her suffering seemed very great, even while lying still. I sent one and one-half grains of opium, which she took, but without relief. I *saw* her some hours later, still suffering, and injected over the deltoid muscle ¼ gr. sulph. morphia. After 10 minutes she had no more pain.

CASE 5.—Mr. E., the subject of a knot of varicose veins on his hip, applied for relief from this ugly deformity. I injected the veins as full as possible of a saturated solution of ferri persulph. This enlarged the veins and rendered the little tumor quite sore for a few days, after which the difficulty disappeared.

CASE 6.—Mr. D. was taken with a most agonizing pain over the region of the left kidney, and down the course of the ureters. He was immediately prostrated; extremities cold. Pulse very feeble; respiration labored. It was just such a case* as one would naturally expect opium to be hours in relieving, if given by the stomach, even in conjunction with other remedies. I at once injected 15 minims of Magendie's Sol. In 15 minutes the pain was very much abated, but still severe. I gave 10 minims more, and in 10 minutes he was perfectly easy, but greatly prostrated from the effects of the pain. The morphia produced no ill effects.

These cases could be multiplied, but it is needless. I will turn to a few cases given by others.

Dr. W. Haining reports a case of tetanus cured by injections of Calabar bean.† Dr. Fraser reports the cure of nine cases out of eleven‡ by the same remedy, but he combined both methods of administration.

Strychnia has been successfully used to relieve paralysis, and as a tonic, after it has failed to produce the desired effect by the stomach. Hunter cured§ one case of six years', and another of

* Probably a case of the passage of nephritic calculi.

† London Lancet, March, 1870.

‡ N. Y. Jour. Med., May, 1871, p. 538.

§ Bartholow Hyp. Med., p. 104.

two and one-half years' standing; another case, time of duration not stated. He and Echeveria have treated all forms of paralysis by this method successfully. The latter recommends great care in discriminating the proper cases for its use in this disease. It should not be used by this method in cases where it is contra-indicated by the stomach. Morphia, and its salts, are the most important of the whole list for this method. The sulphate, being the most soluble, is the one commonly used; the ordinary dose is from one-eighth to one-half grain. The dose should be small at first, until we know how each case will bear it. Doses of larger size may be given in extreme cases of pain. The morphia habit may be established by this method, the same as by the stomach. Dr. Buzzard* reported a case to the "Clinical Society of London," of a lady who had frequently used thirty-three grains of morphia in twenty-four hours, by subcutaneous injection. He injected fifteen grains at one dose without bad effect. First in the list for relief by morphia stands neuralgia, in all its forms and locations. It is often cured by a few injections, after resisting other treatment for months. In delirium tremens it is highly extolled by nearly every authority. The danger of narcotic poisoning is less, for the reason that each portion is immediately taken up, and its effects produced to procure sleep. In hysteria it is one of our most reliable medicines. I have used it with the happiest effects. Hunter, Lauder, Frovmiller and Lorent speak well of it. Bartholow says:† "In my own experience, no remedy has acted so promptly and satisfactorily in terminating a hysterical paroxysm as this." In puerperal mania it is highly commended, and those who have used it consider it safer and far superior to chloroform. In all diseases having their origin in morbid reflex-excitability it is perhaps the best remedy at our command. In tetanus, it is rapidly coming into use, and should certainly be tried in every case where stomachic administration is difficult. In local or general muscular cramp, it cannot be too highly estimated. In spasmodic asthma, there is perhaps no means we can command that will compare with the subcutaneous administration of morphia or atropia, or the two combined, in *rapid* and *complete* relief. I have

* London Lancet, March, 1871, p. 161.

† Bartholow, p. 49.

seen almost perfect relief follow in five minutes. Atropia is probably the best of the two remedies, but *the two combined is better still.* In hiccough, angina pectoris, pleuritis, etc., it is a certain and valuable remedy. In *cholera*, Bartholow says: "The most instantaneous and striking relief is afforded by the hypodermic injection of morphia." One of the most important effects is in the relief of congestive chills. Dr. Jos. E. Garrison,* Asst. Surg. U. S. A., "reports five cases in which morphia, injected subcutaneously, absolutely cut the paroxysm in a *few minutes*," and the subjects were able to sit up and walk about in a remarkably short space of time. One, though so far depressed as not to know of his presence, so far recovered *before he could put up three* five grain powders of quinia, that she asked to get out of bed, and did so. Morphia, by this method, is highly extolled for the relief of pain in cancer, and Bartholow asserts that "in scirrhus of any portion of the digestive tract, especially of the stomach, no palliative is comparable to the hypodermic injection of morphia."†

The physiological antagonism between morphia and atropia is now pretty well established. Poisoning by the one may be readily antagonized or antidoted by the other. A very interesting array of facts and cases may be found in the Medical and Surgical Reporter, April 22, 1871, p. 334, by Dr. John A. Little, of Delaware, Ohio, in which he gives his own experiences, and the authority of standard teachers in support of this fact. The report will repay perusal. The therapeutic applications of atropia are as important as those of morphia, but the number of diseases in which it has, or may be used, are not so great. In asthma, it is very highly extolled, but I can only give it a passing notice. *Atropia, combined with morphia, will very often obviate the ill effects of the latter, without destroying its anodyne effect, while at the same time it really increases the hypnotic power of the morphia.*

The uses of quinia, by this method, are very valuable and effectual. Dr. Moore, of Bombay Medical service, states‡ that four or five grains of quinia, injected beneath the integument, are

* Amer. Jour. Med. Science, April, 1870, p. 571.
† Bartholow, p 64.
‡ Bartholow, p. 131.

equal to five or six times that amount taken into the stomach. Not only are its effects immediate, but greater and more permanent, being less liable to be followed by a relapse. Bartholow states that from three to five grains are sufficient "to cure an ordinary intermittent." In* those deadly malarial attacks, known as "puniceous," is the efficacy of this treatment most conspicuous.

We all know the importance in these cases of bringing the patient rapidly under the influence of the remedy, hence the great advantage of this over other methods of treatment. It is my opinion that a combination of morphia and quinine is more appropriate, and would be more effectual than either one alone.

Dr. R. B. Maurey, of Port Gibson, Miss., gives a report of twenty-five cases of the various forms of malarious fevers treated with quinia by the hypodermic method. He states that "in most of the cases six grains was the entire quantity of quinia used during an intermission or remission; in the severer cases eight grains was the quantity used. Cinchonism was fully produced in from forty to sixty minutes." He thinks that life can often be saved by this method in congestive intermittents, when it could not be done by the stomachic method, for the reason that absorption by the stomach is too slow in cases where the chill is near or already at hand, or that it may be so irritable as not to retain the remedy long enough to affect the system.

Many other remedies appropriate for this method have been very successfully used, such as conia, caffein, ergotin, mercury, arsenic, physostigma, etc. Of these I cannot speak for want of space, further than to call attention to the latter as an excellent remedy in tetanus, for which it is considered by many our best remedy. *But especially would I ask attention to the fact of its being the antidote for strychnia poisoning.* It is† the true physiological antagonist of strychnia. While strychnia exalts, physostigma destroys the reflex faculty of the cord. The rapidity, certainty and intensity of effect by this method render it valuable in both of these difficulties, but caution should be observed not to use too large doses, one-third of a grain of the extract being sufficient to commence with.

Different instruments are used for this method, but all are quite

* Am. Jour. Med. Sci. Oct. 1866, pp. 671–3.

† Bartholow, p. 124.

similar in construction. They are made of glass, gutta percha and silver. The glass instruments are graduated on the barrel—the others are graduated on the piston-rod—thus enabling us to know just how much of any solution we have in the syringe, by knowing the strength of which we can give precisely the dose desired. If air is drawn into the syringe it is inserted and the piston pushed in till it is all excluded. The syringe charged and ready for use, the integument is pinched up, between the thumb and finger, the point of the needle placed against the skin at the place where it is designed to enter. It is then passed through the skin by a *quick thrust*, after which it is carried about an inch into the cellular tissue by a slow movement, then slightly withdrawn, and skin raised, (see *ante*), always being very careful to avoid any vessel or nerve, especially a vein. The fluid is then discharged into the cellular tissue *very slowly*, *drop by drop*, till the requisite amount is discharged. I always deem it better to have a little more in the syringe than is injected. This makes it doubly sure against the introduction of air. Some authorities recommend that the tube be left a few minutes, so that if a vein has been entered, or any ill effects are likely to be produced, the barrel can be again screwed on to the tube and much of the fluid withdrawn, thus preventing the absorption of the whole portion administered.

The best situation for injections are the outer surface of the arm, the deltoid surfaces, the abdomen, back, chest, and outer face of the arms and thigh.

The effects are produced with about equal rapidity from each of these sites. Bony prominences and vascular sections should be carefully avoided.

It is better not to inject an inflamed surface, nor to inject *twice precisely in the same place*, as abscess or pustule might result from a neglect of this precaution.

In cases of long seated, obstinate pain, it is better, in my opinion, ceteris paribus, to inject at or very near the painful point, for reasons before stated. (See *ante*).

SOLUTIONS.

In this method much depends on the purity of the medicines, and the character of the solutions used. *All medicines used*

should be in a perfect state of solution, as particles of undissolved medicine, when introduced into the subcutaneous *cellular tissue*, are not readily absorbed, and are liable to act like a foreign substance, producing inflammation and abscess; besides, the foreign substances block np the cavity of the needle. It is always better to filter carefully the solutions, thus removing all dirt and foreign matter or undissolved particles of medicine.

The solutions should be as nearly *neutral* as possible, and *not too greatly concentrated nor acrid.* Any solution capable of coagulating the circulating fluid, or any of its constituents, should be avoided, except in NEVI and VARIX.

Pure distilled water is best for preparing solutions. *This* can be injected in any reasonable quantity without harm. It is better to court quantity to a reasonable extent, than too great concentration, for it is not so much the *quantity* as the *strength* that causes ill effects. Solutions, especially of the alkaloids, should not be too long kept, for the reason that PENICILLI* develop in them at the expense of the alkaloid, thus rendering the solutions of uncertain strength, and not so safe for use.

FORMULA.

Probably the best formula for morphia is Magendie's† Solution, which consists of: ℞ Morphia Sulph. grs. xvi; Aqua Destill., ʒ i; M. Of this, 30 minims equals *one grain*, the usual dose being 5 to 8 minims. For morphia and atropia combined, the solution must vary according to the desired purpose. As one *grain* of morphia *is equal in toxic power to* 1-24 *grain atropia*, from this we can gauge the dose. A very good formula is:‡ ℞ Morphia Sulph. grs. xvi; Atropia Sulph. gr. i; Aqua Destill., ʒ i; M, and filter, 5 minims the average dose. More morphia and less atropia can be used, or *vice versa*, as we desire to affect the patient. *The latter increases the hypnotic effect of the morphia.*

For atropia a very good formula is: ℞ Atropia Sulph. grs. ss; Aqua Destill., ʒ iii; M. Of this, 4 minims equal 1-90 of a grain. The strength *can* be doubled, but it is better not to do so.

Of strychnia a proper solution is: ℞ Strychnia Sulph. grs. ii;

* Bartholow, p. 20.

† Bartholow claims it as his own; who is correct?

‡ Bartholow, p. 89.

Aqua Dest. ʒ vi; M. Of this, 5 minims equal 1-36 of a grain, probably the average dose by this method, but it would be better to use only 1-50 of a grain at first.

Of quinia sulph. a proper solution is: ℞ Quinia Sulph. grs. xx; Acid Sulph. Arom. gtt. xx; Aqua Dest. ʒ iii; M, and filter. Of this, 9 minims equal 1 grain.

It is to be regretted that quinia is not readily soluble, without the aid of considerable acid; but by careful management ill effects can be avoided. I have injected two grains with good effect, and without bad after consequences. Of solutions for other remedies, I have not space to speak; however, I think it proper to add that this method, though possessing a very wide range of application in many and various diseases, should not so far be used as to exclude the use of remedies by the usual method in most diseases, where they are of long continuance. But as it is yet in its infancy, we are hardly able to predict whether or not in course of time it will take largely the place of stomachic administration. A report is already in print of its being very highly successful, by the injection of *calomel* in constitutional syphilis.* But if it could only be used for the relief of very severe pain, and in severely spasmodic diseases, it should be understood and used by every practitioner of medicine and surgery.

Since writing this article I have received an account from Dr. Thomas E. Pickett, of Maysville, Ky., of a man who by mistake received and took at once eight grains of sulph. morphia. Its poisonous effects were very soon manifested. All the usual means were immediately resorted to for his relief, viz.: flagellation, forced exercise, counter-irritants, cold douche, titillation, slapping the soles, galvanism, etc. The jaws were closed by tonic spasm of the muscles, preventing all attempts at relief by evacuating the stomach, or introducing any remedy whatever into it. All these means failed, and the patient's condition became desperate and quite hopeless. Respirations, 3; pulse, 140; extremities cold, etc. Atropia was now hypodermically used, at the rate of 1-24 grain every thirty minutes. After the fourth dose, improvement occurred, relaxation of the muscles allowed the jaws to open, which was taken advantage of for the use of stimulants by the stomach pump. The patient made a good recovery. The dose

* Lancet and Observer, May, 1871, from Lancet—Med. Gazette.

had been swallowed five hours or more before the atropia was used. The dose of the latter as an antidote in this case was remarkably small, yet its effects seem to have been all that was desirable. Larger doses would have afforded more prompt relief.

ARTICLE VIII.—*Clinical Lectures on Diseases of the Ear.* By Dr. E. L. HOLMES, Prof. Ophthalmology and Otology, Rush Med. College, Surgeon to Chicago Charitable Eye and Ear Infirmary.

MECHANISM OF HEARING.

GENTLEMEN—I propose to present for your examination and study a series of cases, which will illustrate the most common pathological changes in the ear. From these cases, I trust you will learn the methods of investigating aural diseases, comprehend the manner in which they may result in the impairment of hearing, and understand the principles on which their treatment is based.

If you will follow me but for a few minutes in the study of the important points in the anatomy and physiology of the ear, and of the principal phenomena of sound, I think you will admit that the obscurity regarding the nature and diagnosis of aural disease has been greatly exaggerated. I think, also, you will be convinced that while the treatment of many of these diseases is still very unsatisfactory, the treatment of many of the diseases is attended with the most gratifying results.

I shall not burden your attention with the minute anatomy of the ear. Leaving this for your private study of our best works, I shall point out the few landmarks which, if carefully fixed in the memory, will render the rest of the field easily mastered.

Disregarding for the present the external ear, glance for a moment through this silver conical tube into the ear. By the aid of a good light falling directly through the tube, or better, by means of light thrown by this concave reflector, you are able to look upon the walls of the membrana tympani, and the walls of

the external meatus. This membrane — parchment-like — is stretched across the external meatus, separating this from the middle ear. Were it not for this membrane, the middle ear would be simply a continuation of the external meatus.

The middle ear, or tympanum, is a small cavity in the bone, lined with delicate mucous membrane, which also covers the inside of the membrana tympani. This cavity has at its *upper portion* two openings, one leading forward to the throat, the other (one or more) backward to the mastoid cells.

If you examine a recent preparation of the temporal bone, from which the membrana tympani has been removed, you will observe that you can look upon the inner wall of the middle ear, and can pass the point of a probe through the external meatus upon the little elevation called the promontory. In this inner wall, just posteriorly to the promontory, are two small apertures —the *upper* one, oval—the foramen ovale; the lower one, round —the foramen rotundum. Study and fix in your mind all facts regarding these two minute openings, for they play a most important part in the mechanism of hearing.

In the foramen ovale, is fitted the base of the little bone called the stapes or stirrup, so called from its very great resemblance to the stirrup of a saddle. If the portion corresponding to the part of the stirrup on which the foot rests, were circular, this bone would resemble the "box" or piston of the common house pump, as often constructed. In fact, the stapes performs almost precisely the same function in the ear as the piston in the force pump or syringe. Its oval portion, or base, rests quite loosely in the foramen ovale, a very delicate membrane, passing from the edges of the foramen to the base of the stapes, and serving as packing, prevents the passage of water around it, without interfering with its delicate motions as a piston.

The other two minute bones, the anvil and hammer—incus and malleus—serve the same relative purpose as the shaft of a piston. The incus is attached to the stapes by a very delicate joint, and also to the malleus, which last is united, by means of its long handle, to the inside of the membrana tympani. Pressure on the outside of the membrana tympani is consequently conveyed through these minute bones to the stapes, which is moved to a greater or less extent in the foramen ovale, precisely as pressure on the han-

dle of a syringe is communicated through it to the piston, causing it to move in the cylinder.

We have spoken of *two* openings on the inner side of the cavity of the tympani, as being of the greatest importance in this wonderful mechanism. The foramen ovale has just been described as a minute and short cylinder in which plays the stapes as a piston. Before explaining the function of the other, or foramen rotundum, we must show what lies on the other side of the foramen ovale. On examining a prepared specimen, you find that this opening leads into a very irregular cavity called the labyrinth, the portion of this cavity nearest the stapes being termed the vestibule. There are two minute curved channels, each end of which opens into the vestibule; another minute curved channel passes from the vestibule into one of the other canals, consequently, these three little canals, called the semi-circular canals, have five openings in the vestibule. Connected with the vestibule is a very wonderful little organ called the cochlea. You will comprehend the structure of the cochlea by considering the following illustration. Imagine a small leaden tube, closed at one end—further, imagine this tube divided into two lateral halves by a very thin partition passing from the open end *almost to the closed end* of the tube. You can thus understand how water turned into one lateral half would pass down to the bottom and then ascend in the other lateral half. Now imagine this little tube curled two and a half times upon itself in the form of a spiral, and you have at once an idea of the form of the cochlea. This minute spiral in the ear is so placed that one of its lateral halves opens into the vestibule, the other into the *foramen rotundum*, over which is spread a delicate membrane—the membrana tympani secundaria—separating the middle ear from the cochlear portion of the labyrinth.

The next important point for your consideration is the fact that the labyrinth is filled with a limpid fluid, which lies in contact with the fibers of the auditory nerve. You are well aware that water is practically incompressible. If the fluid in the labyrinth was confined in a cavity wholly surrounded with solid bone, the stapes could have no motion in either direction, on account of the incompressible fluid on one side and the weight of the atmosphere on the other. If you fill a large syringe with water, and

place the finger tightly over the orifice from which the stream flows, you will have an illustration of this principle, when you attempt to move the piston in either direction.

In the ear, however, pressure on the membrana tympani, as we have shown, causes the stapes to move inward in the foramen ovale—the fluid is forced through one side of the cochlea, and returns in the same direction through the other half to the foramen rotundum, and causes a slight convexity of its membrane outward. When the stapes is withdrawn, the atmosphere presses on the membrane of the foramen rotundum, and forces the fluid from the cochlea into the vestibule. Hence, one of the chief functions of the foramen rotundum and its membrane is to render vibrations of the stapes possible.

These are, I am well aware, only a very few cardinal points in aural science. But if you will study them carefully, and fix them in your memory, you will, as I said in the beginning, comprehend the more readily the minute anatomy of the ear as you find it in our best text books.

Those of you who are desirous of pursuing the study of aural disease, I must refer to the work of Von Troeltsch, translated by Prof. Roosa, and to the Archives of Ophthalmology and Otology, edited by Profs. Knapp and Moss.

In our next lecture we will consider the mechanism I have described, in its more intimate relation with the phenomena of sound.

The Influence of Abnormal Milk on Nutrition.

Mr. C. Meymott Tidy (*Lancet*), was recently consulted by a lady, whose infant 6 months old, was, to use her own words, "becoming miserably smaller day by day." Undoubted signs of incipient pulmonary tuberculosis were found in the mother, and, on analyzing her milk, it was found markedly deficient in fatty matter. At Mr. Tidy's suggestion, the milk was drawn off at stated times, and, mixed with a stated quantity of mutton suet, was fed to the child from a bottle. The child soon began to thrive astonishingly.

Editor's Book Table.

[NOTE. — All works reviewed in the columns of the CHICAGO MEDICAL JOURNAL may be found in the extensive stock of W. B. KEEN & COOKE, whose catalogue of Medical Books will be sent to any address upon request.]

A Practical Treatise on the Diseases of Infancy and Childhood. By THOMAS H. TANNER, M.D., F.L.S. Third American Edition. From the last London Edition. Revised and Enlarged, by ALFRED MEADOWS, M.D., London. Philadelphia: Lindsay & Blakiston. 1871.

The author of the two preceding editions of this popular work, being unable from a press of business engagements to superintend the revision of this third, has confided the task to an able colleague, and we have the result of his learning and energy in the shape of one of the best books ever written on the diseases of children.

The division into four parts, strikes us as being particularly happy; affording a much more systematic arrangement, and a wider field for the intelligent discussion and understanding of this most difficult and comprehensive branch of medicine.

In the *first* part, he gives us as the first step, a clear statement of the anatomical and physiological peculiarities of childhood, to a thorough knowledge of the various pathological conditions so different as found in the adult, and then proceeds to discuss the hygienic management, embracing the dietary, clothing, exercise, sleep, moral and intellectual training, from the first moment of life to the dawning of maturity. The chapter on dentition should be carefully studied, as affording a solution of the various processes attending the eruption of the deciduous and permanent teeth, and the disorders consequent thereon; and next, the pathology of infancy and childhood, with the statistics of mortality. It cannot be too strongly impressed upon the minds of medical men, the importance of a systematic study, and a proper interpretation of the symptomatology of these diseases, from the expression of the countenance, the gestures and attitudes, the examination of every organ, to a chemical analysis of the urine, if necessary; and it will be only by years of close and accurate observation, that we can hope to be successful in combating the various ailments brought to our observation.

It seems almost superfluous to state that, from the entrance into the sick room, and the first step in our examination,—the taking of the pulse,—to the last,—the inspection of the throat, mouth and gums, (the grievous part of the medical visit, as Dr. West terms it), the most untiring patience, and unvarying good humor, with quiet demeanor and gentle voice, are absolutely necessary to succeed at all, and to those testy and choleric individuals, who cannot endure the wail of an infant, or the fractious yelps of a spoiled child, without a hankering to apply their palms *a posteriori*, or throw them out of the window, we would recommend that their energies be devoted to other branches, for as our author says, "it is by no means easy to understand a helpless infant; his only language is a language of signs, which nothing but habit, experience and patience will enable us to interpret."

The last chapter of this part is devoted to infantile therapeutics, and is deserving of close attention. The proper manner of using and combining, the physiological action of the various remedies, and the conditions calling for their employment, are succinctly set forth, and we the more readily endorse his views, because he leans to the side of conservatism, and does not believe that we possess any of those specific receipts, which so many of our physicians carry in their heads, or if short of memory, in their pocket-books. He believes, and justly too, that many diseases may be avoided by attention to food, cleanliness, and the ordinary rules of hygiene, and does not believe that indiscriminate and hap-hazard medication is at all called for; yet, at the same time, admits the necessity, under certain circumstances, of heroic treatment, inasmuch as acute and destructive disorders run a much more rapid course, and terminate in dissolution more certainly than in the adult. We think this chapter one of the most interesting and instructive in the whole book, and therefore commend it to all, especially the young practitioner.

In the *second* division, he treats of general diseases,—the varieties of fevers, and diathetic disorders. His classification of fevers expresses a truer pathology than any we have seen; the *continued* fevers, typhoid and typhus; the *intermittent* fevers; and the *eruptive* fevers, disregarding entirely those symptomatic, or irritative pyrexial manifestations, arising from inflammations, incidental to other disorders, and merely considering those in

which the group of symptoms constitute, what we call fever,—the very essence of the disease. He tells us of *four* diatheses, hereditary or acquired: the scrofulous; the tubercular; the rachitic; and the syphilitic. They possess some few features in common, but are entirely distinctive, and in many respects antagonistic. For instance, the scrofulous is entirely distinct from the tubercular, having nothing in common, if we except debility, or depraved health, and never occurring in the same subject. The pathological tendencies of the former are exhibited by inflammation of low type, with marked disposition to suppuration, and this with special reference to mucous surfaces, pulmonary and gastro-intestinal; whereas, in the tubercular, the tendency is towards serous membranes, with effusion. In the former besides, glandular enlargements, in the latter tuberculous deposits, and they are as essentially different in many other particulars, as small-pox from scarlet fever, or measles. This runs counter to the opinion of many practitioners, whom we know personally, and who always consider the tuberculous as one of the phases of the scrofulous constitution, but at this present stage of our pathology, they are recognized as possessing opposite and diverse characteristics.

The rachitic is also a disease of mal-nutrition, and affects principally, but by no means entirely, the osseous structures, and sometimes, though rarely, may be engrafted on the strumous.

The syphilitic diathesis of course may be found combined with any of the preceding, and is a disease *sui generis*, either hereditary or acquired. It can be transmitted from either parent, without doubt, and is capable of spreading infection likewise.

The influence which these diatheses have upon the various diseases of younger life, is of course incalculable; the characters which they impress; the pathological tendencies they exhibit; and the therapeutical indications they demand, can only be estimated by their bearings upon present and future generations; and especially is this the case, when we know that such dreadful scourges may be inflicted upon perfectly sound and healthy children, by deprivation from light, heat, nourishing food, and lastly, —*sub rosâ* be it said,—by unsound medication, creating debility and prostration, sapping the very springs of life, by such remedies as antimony, calomel, blood-letting, etc., pushed *usque ad mortem.*

Part *third* opens with the nervous diseases, a special class, more obscure, and more terrible in their manifestations than any other in the category, besides presenting a high rate of mortality. On account of the rapid development of the brain, and the activity of the circulation in early childhood, almost every disease is ushered in, or accompanied by decided, and sometimes alarming nervous phenomena, and it becomes necessary to understand the symptoms of nervous disorders, functional or organic, if we hope for success in the treatment of children. In the chapter on respira-

tory diseases, we find an excellent division, beginning with the nasal passages, throat, etc.; next, larynx and bronchial tubes; then, serous surfaces; and lastly, lung tissue itself. The mortality, absolutely speaking, is greater in these disorders of the respiratory system, than those of the nervous, but relatively, it is not so, from their greater frequency, and probably there is no class of diseases more commonly associated with severe disturbance of the nervous centres than those discussed above.

Of those sections, treating of the circulatory and urinary systems, we have but little to say, except that the arrangement is unexceptionable, the pathology sound, and up to the most modern investigations. And the treatment, as in that of the pulmonary ailments, essentially scientific, sustaining, and expectant, never rash, lowering nor heroic.

The classification of skin diseases in chapter fourth, is the work of Dr. Tilbury Fox, one of the most learned and successful dermatologists in England. It is much simplified, and divested of many technical terms, for a better understanding by the younger practitioner, and presents the treatment and diagnosis in a clear and unmistakable light. As these cutaneous diseases are very rife among children, and as a rule are readily curable, provided their pathology be fairly understood, and their causation too, we hope every one will give this section an especial consideration. The next two chapters treat of diseases of the eye and ear, and like the one on those of the skin, are well placed before the reader, but they present simply the outlines of the various diseases which afflict these important organs, and can only be considered as guides to a proper study of the monographs. Without a thorough knowledge, and extensive experience, if severely visited, we had better send them to those who make a specialty of such branches.

In part *fourth*, and the last, the many accidents, injuries and deformities at and after birth are brought before us, and though this properly belongs to the domain of surgery, and in some few particulars to midwifery, yet we must look upon it as a very useful and handsome supplement to complete this instructive work.

In the appendix, we encounter a large collection of formulæ and receipts for making the necessary articles of diet, etc., to be used in the sick room, and also a large number of scientific prescriptions to meet the morbid conditions of the many diseases of children. We should hardly finish a conscientious review of this book, did we not offer a caution, especially to the new beginner, that in looking over these combinations, he should do so merely with the view of learning how remedies are combined, those which are compatible, their doses, and the indications calling for such uses: but the moment he shall attempt to commit them to memory, he had better close the book at once. No especial remedy or combination will suit persons of different tempera-

ments, and under the infinitely varying conditions of the human system, and no stereotyped prescriptions will be dealt out to Tom, Dick and Harry, as was the treacle and sulphur to the squalid children of "Dotheboy's Hall," by any scientific physician, who reasons out the requirements of each case, and then applies his knowledge. Any other way is empirical, and if you once begin thus, you will necessarily degenerate, for the road to true knowledge is no golden one, and the "imp of idleness" ever stands at our elbow to draw us from the path of duty. Go into any drug store, and study his prescriptions, if you are properly instructed, you will read your man at once, for "ye shall be known by your works."

To finish, we endorse this book heartily; it is equal to West, and Barthez, and Rilliet; embodies a vast amount of information; is very clear and intelligible in its descriptions; and will certainly meet the requirements of all desiring to make study of the diseases of infancy and childhood.

"VOLTA REEKE."

BOOKS RECEIVED.

Treatise on Diseases of the Nervous System. By WILLIAM A. HAMMOND, M.D., Prof. of Diseases of the Mind and Nervous System, and of Clinical Medicine in Bellevue Hospital Medical Coll., etc., etc. With Forty-five Illustrations. *Est quoddam prodire tenus, si non datur ultra.*—HOR. New York: D. Appleton & Co., 549 and 551 Broadway. 1871. Pp. 754. By S. C. Griggs & Co., Chicago.

The Eye in Health and Disease. By B. JOY JEFFRIES, A.M., M D., Fellow of the Massachusetts Medical Society, Member of the American Ophthalmological Society, Ophthalmic Surgeon to the Massachusetts Charitable Eye and Ear Infirmary, Ophthalmic Surgeon to the Carney Hospital, Lecturer on Optical Phenomena and the Eye, at Harvard University. CONTENTS—Anatomy of the Eye. Physiology of the Eye. Old Sight and Spectacles. Near-Sightedness, or Myopia. Long-Sightedness, or Over-Sightedness—Hypermetropia. Astigmatism. Cataract in Children simulating Near-Sightedness. Cataract. Artificial Eyes—How and Why they are Worn. Squinting Eyes—Why and How they must be operated on. An Artificial Pupil—What it is, How and Why the Operation is performed. The Ophthalmoscope—What it is, and How it is used. Injuries and Diseases of the Lids and Eye—Their General Care and Treatment. Type for Testing Vision. With 30 illustrations, 8vo, cloth. Price, $1.50, mailed free, on receipt of price. Alexander Moore, Publisher & Bookseller, 2 Hamilton Place, Boston.

On the Physiological Effects of Severe and Protracted Muscular Exercise. With special reference to its Influence upon the Excretion of Nitrogen. By AUSTIN FLINT, JR M.D., Prof. Physiology in the Bellevue Hospital Med. Coll., N. Y., etc., etc. New York: D. Appleton & Company, 549 and 551 Broadway. 1871. Pp. 91.

This is a scientific account of the physiological phenomena observed during the time occupied by the celebrated pedestrian, Weston, in accomplishing the feat of walking 100 miles in twenty-one hours and thirty-nine minutes, and subsequently, in several similar prolonged muscular efforts by the same person. The general account and summing up are given by Prof. Flint in his usual careful and lucid manner.

PAMPHLETS.

A Month's Tour through the Alps of Switzerland. By PROF. JAMES D. DANA, LL.D., Yale College, etc., New Haven, Conn. Charles C. Chatfield & Co., New Haven, Conn. Pp. 11. S. C. Griggs & Co. 25c.

Convenient for reference to the traveler, as indicating the route for both the savan and the sight seer. A detail of expenses is given from New York and return.

The Detection of Criminal Abortion. By ELY VAN DE WARKER, M.D., Syracuse, N. Y. Boston: James Campbell, Publisher, 18 Tremont St., Museum Building. 1871. Pp. 16.

Editorial.

Original Communications.

Our readers will notice with pleasure the increased value and extent of this department of the JOURNAL. Indeed we have secured the assistance of a corps of co-laborers of which any journal might well be proud. Without invidious designation, we may safely say that, in the present number alone, there are individual articles worth more to the careful reader than a year's subscription to this or any other medical periodical in the country.

The variety of topics discussed is so great that we have not deemed it worth while to borrow matter from our contemporaries

We have several valuable communications on file, for which correspondents will accept thanks, and pardon us for temporary delay in appearance. Be not weary in well doing.

The Prurient Prudes—

long-haired men and short-haired women—who have taken it into their otherwise empty heads, to assume virtuous indignation at some of the expressions made use of by one of our correspondents, several months since, are confidentially advised to look over an article, published by one of our contemporaries in this city, entitled the "Social Evil." An attempt was made to have this latter article published at the municipal expense and sent to each family in the city.

Our correspondent's article was intended for physicians only, and we undertake to say, none of them were shocked. If any women read medical books or medical journals, we opine they have already lost the "wire edge" of their modesty sufficiently to endure even worse shocks.

A lady complimented Dr. Johnson, the lexicographer, on the fact that he had left out all the naughty words from his dictionary.

"I perceive," said the great hater of shams, "that you have been looking for them."

Now you cream-colored man, or vinegar-visaged woman, who have taken it upon yourselves to howl over "VOLTA REEKE," do a farther service to the world by hanging yourselves respectively with a garter and a necktie.

The Gaillard-Yandell

imbroglio fills the papers of Louisville with unseemly professional squabbles. Meanwhile, we remain blissfully ignorant of the real facts in the case. Dr. Gaillard's promised *exposè* in the *Rich. and Lou. Jour.*, for June, has not yet come to hand. "In the name of the Prophet—Figs." The Presidency of the Am. Med. Association is getting to be a position fraught with as much danger from missiles of all nastiness as the old-time pillory. Let us have peace!

Intestinal Concretion.

J. P. Walker, M.D., of Mason City, Ill., favors us with a fragment of a fine specimen of a hair ball, encrusted with calculous matter, taken from the duodenum of a cow. The entire ball

was eight and three-fourths inches in circumference. Such formations are not unprecedented, but are sufficiently rare to be considered curiosities.

Radical Change.

The Harvard Univ. Med. School has adopted a course of instruction extending, like the academic curriculum, throughout the year. Three years' instruction will be given by lectures, recitations, etc., and a series of examinations has been arranged, to occur at intervals during the course of study.

The plan is essentially the one first adopted and then abandoned by the University of Michigan, twenty odd years since. Practically it furnishes medical education to rich men's sons only. The vast majority of medical students have neither time nor means to avail themselves of the conceded advantages of such a course. Meanwhile, we reiterate, more depends on the teacher than the "plan." Not even Medical Students can gather figs from thistles.

The State Medical Society.

Proceedings at the recent session were promised us by the Secretary in season for the present number of the JOURNAL, but have not yet come to hand, and we are *reluctantly* obliged to go to press without them. Fortunately they will keep.

Doctors in the United States.

The total number of physicians who paid taxes to the government, for the year ending April 30, was 49,798. Of these there were regular or allopathic, 39,070; homœopathic, 2,961; hydropathic, 123; eclectic, 2,860; miscellaneous or not classified, 4,770.

Proceedings of Societies.

GALESBURG, Ill., June 15, 1871.

The Sixth Annual Meeting of the Military Tract Medical Association was held in Masonic Hall, at Galesburg, Tuesday, June 13th.

M. Reece, of Abingdon, President, occupied the chair. Herbert Judd, of Galesburg, Secretary. Forty members were present, representing eight counties. During the morning service the following new officers were elected:

President—S. P. Breed, of Princeton. Vice President—John M. Morse, of Galesburg. Secretary and Treasurer—Herbert Judd, of Galesburg. Board of Censors—J. K. Crawford, of Monmouth; M. Reece, of Abingdon; Wm. Hamilton, of Galesburg

The address delivered by M. Reece, the retiring President, was voted to be spread upon the Record. The principal business was reports from the following standing committees:

Essayists—E. L. Phillips, of Galesburg; M. A. McClelland, of Knoxville.

Surgery. Wm. Hamilton, of Galesburg; J. N. Todd, of Kewanee, Geo. W. Crossley, Princeton.

Practice of Medicine—Hiram Vance, of Kewanee; W. L. Cuthbert, Monmouth; John P. McClanahan, Norwood.

Materia Medica and Therapeutics—J. P. Breed, of Princeton; H. Marshall, Monmouth; J. V. McCutchen, Norwood.

Obstetrics and Diseases of Women and Children—S. K. Crawford, of Monmouth; W. D. Sterling, Ionia; John W. Hensley, Yates City.

Ophthalmology—L. S. Lambert, of Galesburg.

The cases of surgery, reported by Dr. Hamilton, were interesting. One case, an amputation of the arm near the shoulder, in which one of the ligatures (silk) still remained, the operation performed fifteen weeks since. In the discussion that followed, Dr. S. M. Hamilton, of Monmouth, recommended, from his practice, the silver wire ligature, cut off short, and left in the stump. He had always had good results, and healing by the first intention.

Upon the practice of medicine considerable matter of a general character was presented.

Dr. Wm. Byrns, of New Windsor, reported a man who took 200 grs. of powd. opium; he was some distance away, and when found was completely comatose. This case was successfully treated by emetics, strong coffee, cold effusions, and active moving of the patient.

President Breed read an extensive and valuable report upon Therapeutics. The reports from the Committee on Obstetrics were of a difficult variety, with one, a fatal result. Dr. L. S. Lambert read a lengthy paper upon "Anomalies of Refraction." This paper, together with the various reports were referred to the Committee on Publication.

Under miscellaneous business, considerable interesting matter was discussed.

Drs. Vance, S. M. Hamilton, Webster, Cuthbert and Gilbert presented some new rules in regard to membership and dues, which were adopted by the Association.

Dr. A. V. F. Gilbert, of Monmouth, was appointed by the President, as Committee on Necrology.

The deaths of Dr. H. C. Graham, of New Windsor, and Dr. Geo. Gillis, of North Prairie, were reported, and referred to this committee.

The meeting was thoroughly business-like and profitable to all.

Galesburg was chosen as the place for the next meeting.

Upon the motion of Dr. Hiram Vance, the Association voted that the Secretary forward a report of this meeting to the *Chicago Medical Examiner* for publication.

Dr. H. S. Hurd, of Galesburg, moved, which was voted, that the report be also forwarded to the *Chicago Medical Journal* for publication.

The Association then adjourned to meet at Galesburg, on the second Monday in January, 1872.

HERBERT JUDD, *Sec.*

Board of Trustees.

HON. W. B. OGDEN, PRESIDENT.
HON. GRANT GOODRICH, SECRETARY.
HON. MARK SKINNER, TREASURER.

L. C. P. FREER, ESQ.	DELASKIE MILLER, M.D.
HON. HUGH T. DICKEY.	R. L. REA, M.D.
HON. N. B. JUDD.	MOSES GUNN, M.D.
J. W. FREER, M.D.	JOS. P. ROSS, M.D.
EPHRAIM INGLIS, M.D.	EDWD. L. HOLMES, M.D.
J. ADAMS ALLEN, M.D.	HENRY M. LYMAN, M.D.

HIS EXC. JOHN M. PALMER, *Governor,*
WM. M. SMITH, *Speaker H. R,*
J. W. FREER, M.D., *Pres. College,*
} *Ex-Officio.*

FACULTY.

J. V. Z. BLANEY, A.M., M.D.,
Emeritus Prof. of Chemistry and Pharmacy.

JOSEPH W. FREER, M.D.,
Professor of Physiology and Microscopic Anatomy, College, PRESIDENT.

J. ADAMS ALLEN, M.D., LL.D.,
Prof. of Principles and Practice of Medicine, 503 Michigan Avenue.

E. INGALS, M.D.,
Prof. of Materia Medica and Medical Jurisprudence, 190 South Clark St.

DELASKIE MILLER, M.D.,
Prof. of Obstetrics and Diseases of Women and Children, 518 Wabash Av.

R. L. REA, M.D.,
Prof. of Anatomy, 119 Clark Street.

MOSES GUNN, A.M., M.D.,
Prof. of Principles and Practice of Surgery and Clinical Surgery, College.

EDWIN POWELL, M.D.,
Prof. of Military Surgery and Surgical Anatomy, 45 Clark Street.

JOSEPH P. ROSS, M.D.,
Prof. of Clinical Medicine and Diseases of the Chest, 429 West Washington Street.

EDWARD L. HOLMES, M.D.,
Prof. of Diseases of the Eye and Ear, 169 Dearborn Street.

HENRY M. LYMAN, M.D.,
Prof. of Chemistry and Pharmacy, 26 N. Ashland Avenue.

CHARLES T. PARKES, M.D.,
Demonstrator, and Assistant to Prof. of Surgery.

F. L. WADSWORTH, M.D.,
Assistant to Professor of Physiology.

E. FLETCHER INGALS, M.D.,
Assistant to Professor of Materia Medica.

C. T. FENN, M.D.,
Assistant to Professor of Obstetrics.

L. W. CARR, M.D.,
Assistant to Professor of Chemistry.

F. HENROTIN, Jr., M.D.,
Prosector to Professor of Anatomy.

CHARLES KEIL, - - - Janitor, at College.

Rush Medical College,

CHICAGO.

ANNUAL ANNOUNCEMENT AND CATALOGUE,

FOR 1871-2.

THE Introductory Lecture to the Twenty-ninth Annual Course will be given in the Lower Lecture Room of the College, on Wednesday Evening, September 27th. The Regular Lectures will commence on the following morning, and continue Twenty weeks. As there will be but one Introductory, students are admonished that their interests demand their attendance at the opening lecture.

College Building.

The College Building, situated on the corner of Dearborn and Indiana Streets, contains two large Lecture Rooms, each having 625 numbered seats, a spacious Laboratory, Museum, and Dissecting-room—the latter, 38 by 80 feet in size, thoroughly ventilated, lighted by side and skylights, and abundantly supplied with gas and water, containing 50 tables, and private closets for the wardrobes, books, and instruments of each class, is unquestionably unequalled for its purpose. The whole building is warmed by steam, by which a uniform and agreeable temperature is secured in all its parts. Several of the Faculty have their offices in the building, affording every requisite facility for students to secure such information as they may

from time to time desire. Experience fully attests the perfect success of the appliances for both heating and ventilation. Not a single case of severe sickness has occurred in the large classes assembled. It is clear that, aside from size, very important hygienic improvements have been secured in the new structure, making this the finest and most commodious Medical College building in the country.

Members of the profession are invited to call and survey the building and its advantages at any time.

School of Chemistry.

The Chemical Laboratory has been thoroughly renovated, and is now open to students who desire instruction in Practical Chemistry. All students connected with the College are exercised in Elementary Chemistry during the spring and winter sessions, but special practice in analysis, either qualitative or quantitative, may be commenced at any time during the year.

Since our last announcement, Professor Blaney has retired from active duty in the College, and Henry M. Lyman, M.D., has succeeded to his chair. The well-known abilities of the present incumbent, and the success of his course of lectures during the past session fully warrant us in congratulating our patrons and ourselves upon his appointment to a chair heretofore filled by Professors Blaney and Carr.

Materia Medica.

Materia Medica is illustrated by a well selected cabinet of medicinal substances, and with colored plates of medicinal plants. Great care will be taken to instruct the class as to the physiological action of remedial agents, while in their therapeutic application, a careful conservatism will be sedulously inculcated.

Physiology.

PROFESSOR FREER is spending his fourth summer in Europe, engaged in scientific investigations, and will return to give his

course, which, by vivisections, and otherwise, will demonstrate his branch in such a manner as to include all its most recent discoveries. A peculiarity of this course, in this College, is, that the teaching, in every part, is not only didatic but experimental and demonstrative, to an extent unequalled, and hitherto unattempted, in this country.

Ophthalmology.

In addition to the didactic course at the College, clinical instruction will be given twice a week at the Illinois Charitable Eye and Ear Infirmary.

Physicians and advanced students, desiring to make ophthalmology and otology subjects of special clinical study, will find most ample opportunities of witnessing important surgical operations on the eye, and of examining and comparing large numbers of cases.

During the year ending Jan. 1, 1871, over eleven hundred patients were under treatment; during the past winter there was an average daily attendance of fifty patients at this Infirmary.

Anatomical.

Materiel is abundant, and furnished at reasonable rates.

Surgical and Medical Clinics.

Professor Gunn will conduct his Surgical Clinique in the College every Saturday.

Professor Miller has thoroughly organized a Gynæcological Clinique, which he personally conducts, adding a feature of great interest to the course of instruction. Students are brought in contact with diseases of women, and made to witness the modes of diagnosis and of treatment. A large number of cases are presented at this Clinique every Thursday.

Professor Ross will conduct the regular Medical Cliniques, and will give instruction in Physical Diagnosis and Diseases of the Chest.

Patients are received from the city and from the country at each of these College Cliniques. No charge is ever made for operations or for treatment.

Professor Holmes will conduct daily Cliniques in the Eye and Ear Infirmary. Students will have rare opportunities to study diseases of the eye, and to witness ophthalmic operations.

The County Hospital will afford two Medical and Surgical Cliniques each week. Invaluable facilities are afforded the students in this institution.

The Marine Hospital will be regularly open to the students of this College.

The North Chicago Charity Dispensary, in connection with the College, will be open daily, where students are afforded an excellent opportunity for perfecting themselves in the art of diagnosis.

Graduation.

The following are the requirements for the Degree of Doctor of Medicine, *viz.:*—

1st. The candidate must be 21 years of age, and give satisfactory evidence of possessing a good moral character.

2d. He must have pursued the study of medicine three years, and attended at least two courses of Lectures, one of which must have been in this Institution.

3d. He must have attended Clinical Instruction during, at least, one College term.

4th. He must have pursued the study of Practical Anatomy, under the direction of the Demonstrator, and to the extent required by the rules of the College.

5th. He must notify the Secretary of the Faculty of his intention to become a candidate, and deposit the amount of the Graduation Fee with the Treasurer, on or before the 20th day

of January. In case the candidate fails to graduate, the fee will be returned to him.

6th. Every candidate must undergo a full and satisfactory examination on all branches taught in the College.

7th. Graduates of other respectable schools of medicine will be entitled to an *ad eundem* degree, by passing a satisfactory examination, paying the graduation fee, and giving evidence of a good moral and professional character.

Board and Rooms.

Good board, with rooms and all the usual accommodations, can be obtained at as reasonable rates in this as in any other city. By associating in clubs, students may supply themselves with good accommodations at a material reduction from ordinary rates.

Spring and Summer Instruction.

Under the direction of the Faculty, a Spring and Summer Course, beginning on the first Wednesday of March, and ending on the 30th of June, is annually conducted, consisting of lectures, recitations, and clinical observations at the Hospitals and College Dispensary. It is not intended to be in lieu of a regular course, but is established to afford greater facilities to students desiring to remain in the city during the summer, for the benefit of clinical advantages.

This course is free to Matriculants of the College.

There are also abundant facilities, connected with the College, for the pursuit of special studies, by PRIVATE COURSES, under competent instructors, and for Private Examinations on the subjects treated in the public lectures, of which the student may avail himself, as his inclination and advantage may dictate.

Directions to Students.

Students will sign the Matriculation List, and obtain their tickets of the Treasurer, PROF. INGALS, at his office, 190 Clark

Street. Students may select their seats in the lecture-rooms when they take their tickets. The Janitor may be seen at his residence in the College building, and will aid in obtaining boarding places, rooms, etc. For circular, address the Secretary, Professor DELASKIE MILLER, 518 Wabash Avenue.

Books of Reference.

Students will find a good assortment of medical books and surgical instruments in this city. The following books of reference, among others, are recommended:—

Chemistry.—Fownes, Brande and Taylor, Wells.

Anatomy.—Gray, Wilson.

Physiology.—Todd and Bowman, Flint, Dalton, Draper.

Materia Medica.—Waring, Stillé, Wood, U. S. Dispensatory, H. C. Wood's Abridgment of Pereira.

Medical Jurisprudence.—Taylor, Beck, Wharton, and Stillé.

Obstetrics.—Hodge, Cazeau, Bedford, Churchill.

Diseases of Women.—Scanzoni, West, Thomas, Hewitt.

Diseases of Children.—Condie, West, Tanner, Bouchut, Smith, Vogel, Meigs, and Pepper.

Surgery and Surgical Pathology.—Erichsen, Holmes, Druitt, Gross, Paget.

Practice of Medicine.—Flint, Aitken, Niemeyer, Watson.

Clinical Medicine and Disease of Chest.—Bennett's Clinical Medicine; Flint, or Walsh, on the Heart; Walsh, or Fuller, on the Lungs.

Surgical Anatomy.—Maclise.

Microscopic Anatomy.—Todd and Bowman, Queckett.

Ophthalmology.—Williams, Stellwag, Wells.

Otology.—Roosa's Von Troeltsch.

The Library Room,

To which all members of the Class have free access, is pleasantly lighted and heated, and to its tables all the medical periodicals of this country are regularly contributed. This

enables students at leisure intervals to familiarize themselves with the current medical literature of the times, and cultivates in them a habit of general professional reading, and begets a disposition to subscribe for such journals when they become practitioners.

The Faculty embrace this opportunity to thank those publishers who have gratuitously supplied their journals to the Reading Room; and express the hope that the habit of journal reading, formed by the students, will yet bring a full return for their enterprise and generosity.

Fees.

Lecture Fees for the Course	$55 00
Matriculation Fee	5 00
Dissecting Ticket	5 00
Hospital Tickets	5 00
Graduation Fee	25 00

From Alumni of this and other respectable Medical Colleges, the Matriculation Fee only will be required.

CATALOGUE OF STUDENTS.

Session of 1870-71.

STUDENTS.	STATES.	PRECEPTORS.
Adams, Orion J. H.	Illinois	Harvard University.
Anderson, E. V.	"	Dr. J. Northrop.
Ashbaugh, John J.	Missouri	Dr. T. L. Ashbaugh.
Attwood, Arthur W.	Iowa	Dr. W. C. Lewis.
Bachman, Edwin	Michigan	Dr. W. E. Fenwick.
Bachman, Henry S.	"	Dr. W. E. Fenwick.
Badger, Charles	Wisconsin	Practitioner.
Baker, William S., M.D.	Illinois	Practitioner.
Barker J. Newton	Iowa	Dr. B. H. Hinley.
Bartholow, James M.	Illinois	Practitioner.
Bartl, Thomas	Indiana	Drs. Ellis & Smythe.
Baxter, W. W.	Illinois	Practitioner.
Beech, Rollin E.	"	Dr. E. M. Beech.
Bertram, Victor A.	"	Dr. J. M. Cassells.
Blackman, W. E.	Iowa	Dr. A. M. Blackman.
Blaney, James R.	Illinois	Prof. J. V. Z. Blaney.
Bond, Arthur G.	Wisconsin	Dr. E. G. Horton.
Booth, Charles E.	"	Dr. Daniel Bond.
Bragg, T. H.	Iowa	Practitioner.
Brandon, Geo. W.	Illinois	Dr. Charles Hunt.
Brown, Albert C.	"	Dr. J. H. Brown.
Brown, Frank H.	Wisconsin	Dr. J. J. Brown.
Brown, Lindsey S.	"	Dr. C. Houghman.
Bryan, John C.	Illinois	Dr. F. A. Bryan.
Buchan, Alfred L.	Wisconsin	Dr. G. F. Newell.
Burbank, Charles H.	Illinois	Dr. W. E. Clark.
Byrne, John H.	"	Dr. A. H. Foster.
Canfield, F. Antas	Wisconsin	Practitioner.
Carey, Charles H.	Illinois	Dr. J. K. Carey.
Cassingham, Marshall	"	Dr. A. E. Palmer.
Cavins, Riley W.	Indiana	Practitioner.
Chapin, Hiram S.	Illinois	Dr. John H. Tylor.
Chapman E. J.	Indiana	
Clark, Elbert W.	Iowa	Dr. C. M. Fitch.
Collins, Daniel B.	Wisconsin	Dr. James E. Cokely.
Cowan, Frank	"	Dr. J. L. Williams.
Copp, E. D.	"	Dr. A. Young.

STUDENTS.	STATES.	PRECEPTORS.
Cornell, Corwin W.	Iowa	
Craig, N. S.	"	Dr. J. W. Reed.
Crane, O. Phillip	Illinois	Dr. J. N. Ellsbery.
Crumpton, Hezekiah J.	California	Practitioner.
Cunningham, Thomas N.	Illinois	Dr. A. H. Thompson.
Darr, David B.	Iowa	Dr. John Bricker.
Dawson, Jesse W.	"	Practitioner.
De Bey, William B.	Illinois	Dr. William Marsh.
DeWitt, R. Ralph	"	Dr. W. M. Smith.
Donovan, Andrew C.	Missouri	Dr. G. W. James.
Douglass, D. Theodore	Illinois	Dr. E. Dooley.
Dye, Albert A.	Missouri	Practitioner.
Eastman, William	Wisconsin	Dr. J. B. Galer.
Eybert, George, M.D.	Indiana	Practitioner.
Eybert, Rinaldo E.	"	Dr. G. Eybert.
Eskridge, Joseph H.	Illinois	Dr. Lewis Boothart.
Evans, Jesse W.	"	Practitioner.
Everett, William L.	"	Dr. O. Everett.
Ewing, Robert H.	"	Prof. Henry M. Lyman.
Fallows, William	Iowa	Dr. O. B. Dodd.
Farrow, George W.	Illinois	Dr. C. M. Armstrong.
Field, John A.	"	Dr. J. W. Wright.
Fennock, W. E., M.D.	Michigan	
Fine, Ephraim M.	Indiana	Dr. A. T. Steel.
Finnegan, Michael P.	Minnesota	Dr. A. E. Ames.
Flemming, John M.	Illinois	Dr. J. A. Hahn.
Ford, Thomas D.	"	Dr. S. J. Avery.
French, Marcena H.	Iowa	Dr. P. B. Brooks.
Frost, George W.	"	Dr. A. J. Farnsworth.
Furnas, John M.	"	Practitioner.
Galer, George B.	"	Dr. Joseph B. Galer.
Galer, Jared Y.	"	Practitioner.
Gardiner, John H.	Illinois	Dr. J. D. Gardiner.
Gardner, John	Canada	Dr. R. H. Harcourt.
Garten, Milchart H.	Illinois	Dr. James R. Zearing.
Garvin, Eugene S.	"	Dr. J. W. Garvin.
Gaunt, John B.	"	Drs. Kerr & Irvine.
Geiger, William R.	"	Dr. A. S. Maxwell.
Gilluly, Thomas	Wisconsin	Practitioner.
Gillum, Ira H.	Indiana	Dr. Clark Leavitt.
Given, Henry A.	Illinois	Drs. Heller & Reece.
Glennan, Michael A.	"	Dr. A. F. Hand.
Gorlz, William, Jr.	"	Dr. William Gorlz.
Goll, Gustavus G.	"	Dr. I. N. Lilly.
Goodrich, C. G., M.D.	Minnesota	
Greenwell, Samuel A.	Nebraska	Dr. J. R. Conkling.

STUDENTS.	STATES.	PRECEPTORS.
Grigg, Robert C.	Illinois	Drs. Heller & Reece.
Guibor, Charles H.	Colerado	Drs. Sherman & Ware.
Hagans, Bird	Iowa	Drs. Merrill & Sillards.
Hagerty, Joseph L.	Indiana	Practitioner.
Hall, Benjamin	Wisconsin	Dr. G. C. Hall.
Hannaford, Joseph N.	Indiana	Dr. C. D. Frink.
Harcourt, William L.	Illinois	Dr. R. H. Harcourt.
Harper, H. F., M.D.	Indiana	Practitioner.
Harris, Joseph V.	Illinois	Practitioner.
Hayes, Plymmon S.	"	Dr. Justin Hayes.
Hays, John L.	"	
Hess, Frederick	"	Dr. C. T. Seekell.
Hollo, Anders L.	Wisconsin	
Holterman, Niels	Illinois	D. G. C. Paoli.
Hudson, Charles A.	Tennesee	Dr. George W. Hudson.
Hurst, Stith T.	Illinois	Dr. M. Hurst.
Hutchins, James H.	Wisconsin	Practitioner.
Huxman, F. Walter	Illinois	
Ingals, E. Fletcher	"	Prof. E. Ingals.
Jenks, Samuel M.	Minnesota	Dr. Kee Wakefield.
Jessup E.	Iowa	Dr. A. H. Lindley.
Jewett, Daniel L., M.D.	Illinois	Practitioner.
Jones, Henry	"	Dr. J. K. Mosher.
Jones, Joseph Evans	Iowa	Practitioner.
Kelly, Thomas	Illinois	
Knapp, Charles D.	"	Practitioner.
Knight, Anos, M.D.	Michigan	Practitioner.
Kreider, William L., M.D.	Illinois	Practitioner.
La Grange, Robert	Iowa	Dr. C. C. Griffin.
Lark, Thomas T.	Illinois	Dr. William Curten.
Lasher, George W.	"	Dr. J. B. Hamilton.
Leavitt, Philander H.	Indiana	Dr. S. L. Ferrer.
Lee, Charles E.	Iowa	Dr. G. W. Van Zant.
Lee, Joseph	Illinois	
Leonard, W J., M.D.	Indiana	Practitioner.
Leonard, William T.	Wisconsin	Practitioner.
Lincoln, Joseph C.	Iowa	Practitioner.
Lindsay, Samuel	Missouri	Dr. E. B. Strode.
Lochman, William H.	Illinois	Dr. G. W. Crossley.
Macklin, George M.	"	Dr. S. N. Fish.
Magoon, D. Earll	Wisconsin	Dr. R. W. Earl.
Mannon, Adrian A.	Illinois	Dr. William Walker.
Marshall, E. B., M.D.	"	Practitioner.
Marshall, Winfield S.	"	Dr. E. B. Marshall.
Masterson, John A.	Wisconsin	Dr. James Cody.
McCauless, William L.	Illinois	Dr. J. Ritchie.

STUDENTS.	STATES.	PRECEPTORS.
McElroy, Patrick Henry	Illinois	Prof. Henry M. Lyman.
McFarland, John R.	"	Dr. F. W. Hiett.
McGary, Ennis N.	Minnesota	Dr. A. E. Ames.
McLahlan, Chesley D.	Indiana	Dr. F. W. Beard.
McPherson, Robert	Illinois	Dr. Mason McPherson.
Mendenhall, Abijah P.	"	Dr. W. O. Mendenhall.
Migwault, David R.	"	Dr. H. A. Migwault.
Miller, James N.	Missouri	Practitioner.
Mills, George M.	Illinois	Dr. Harvey Dunn.
Minick, Erasmus G.	Indiana	Dr. S. B. Thrall.
Mitchell, Robert J.	Illinois	Dr. W. T. Mitchell.
Montgomery, William T.	"	Dr. W. T. Kirk.
Morgan, S. Othniel	"	Dr. C. Jud. Gill.
Murphey, Thomas C., M.D.	"	Practitioner.
Myers, Noah D.	Indiana	Dr. A. T. Steel.
Newell, George E.	Wisconsin	Dr. G. F. Newell.
Nichols, Herman V.	Wisconsin	Dr. W. Barrett.
Nicoson, David C.	Illinois	Practitioner.
Oliver, Oliver C.	"	Dr. J. W. Oliver.
Overholt, Abraham J.	"	Dr. H. B. Buck.
Owen, Abram	Texas	Dr. R. J. Brackenridge.
Palmer, William H.	Illinois	Dr. R. E. McVey.
Patrick, Zorah E.	"	Dr. E. F. Wood.
Peck, Albert P.	Wisconsin	Dr. A. H. Hoy.
Pelton, Levi H.	"	Dr. W. D. Morehouse.
Pierson, Dolphin W.	Mississippi	Practitioner.
Plackett, Richard	Wisconsin	Dr. W. P. Bunnell.
Pratt, Homer H	Indiana	Dr. A. J. Pratt.
Pritchard, John F.	Wisconsin	Dr. William Moore.
Rannells, Winfield S.	Indiana	Drs. J. E. & J. W. Brackett.
Ratliff, Louis L.	Iowa	Dr. E. C. Chapman.
Richardson, A. Nelson	Illinois	Dr. Joseph Jones.
Roberts, G. Frank	"	Dr. A. H. Kinnear.
Rodgers, Reynold	"	Dr. E. C. Lemen.
Roe, Albert J.	"	Dr. A. R. Roe.
Roome, Charles D.	Canada	Dr. W. F. Roome.
Royall, Berry A.	Tennessee	Dr. R. B. Goshorn.
Russell, Richard C.	Wisconsin	Dr. S. S. Clark.
Sabin, Robert C.	"	Drs. Douglass & Perrine.
Schaefer, John F.	Illinois	Dr. A. B. Brackett.
Schloesser, Alfred G. R.	"	Dr. F. Hoffman.
Schooley, M. H. L., M.D.	Missouri	Practitioner.
Schooley, William T.	"	Dr. M. H. L Schooley.
Sharp, Rupert H.	Wisconsin	Drs. Hurst & Morris.
Sibert, John G.	Illinois	Practitioner.
Smith, Eugene J.	Iowa	Dr. E. L. Mayo.

STUDENTS.	STATES.	PRECEPTORS.
Smith, E. R.	Illinois	Dr. J. H. Smith.
Smith, John I.	"	Dr. F. W. Byers.
Snyder, William	Indiana	Dr. W. Y. Leonard.
Sparks, J. Wilson	Illinois	Dr. D. T. Morgan.
Standiford, William	Indiana	Dr. A. G. Standiford.
Stanton, J. Oliver	Illinois	Prof. R. L. Rea.
Stebbing, P.	Wisconsin	Practitioner.
Steele, Andrew T.	Illinois	Dr. A. Comstock.
Strong, A. B.	"	Prof. J. P. Ross.
Swayze, Henry A.	Iowa	Practitioner.
Taylor, Isaac H.	Illinois	Dr. C. Edwin Elliott.
Thomas, Edwin J.	"	Dr. J. W. Tope.
Thomas, Leverett, W.	"	Dr. B. F. Bennett.
Thompson, John S.	Indiana	Dr. M. V. Witherspoon.
Thompson, Smith C.	Wisconsin	Dr. M. Barrett.
Tillotson, Theodore	Illinois	Faculty.
Turner, E. Leroy	Iowa	Dr. William Boyr.
Upton, Henry B., M.D.	Illinois	
Vancil, George W.	"	Dr. R. E. McVey.
Walker, John Godfrey	"	Prof. J. Adams Allen.
Warner, Amos H.	Wisconsin	Dr. H. Warner.
Way, Joseph Spencer	Illinois	Dr. J. H. Way.
Weed, Everett D.	Michigan	Dr. S. Wilson & Dr. Kellogg.
Wells, Robert W.	Texas	Dr. R. J. Brackenridge.
Wernham, Spencer C.	Illinois	Faculty.
Westbrook, Charles M.	"	Dr. J. F. Lathrope.
West, J. M., M.D.	"	
White, Albert G.	Iowa	Dr. M. H. White.
White, Charles A.	Indiana	Dr. L. H. Kennedy.
White, John A.	Iowa	Dr. A. G. McGrew.
Whittier, William W.	Missouri	Dr. C. Whittier.
Williams, Joseph B.	Indiana	Dr. J. W. Neely.
Williams, William W.	New York	Dr. J. A. Williams.
Willis, John F.	Illinois	Drs. Williams & Latham.
Wood, Fred. B.	Michigan	Practitioner.
Wood, Marshall W.	Illinois	Dr. J. H. Thompson.
Wright, Arthur L.	Wisconsin	Dr. J. Faville.
Young, Ephraim B.	Iowa	Dr. A. D. Wetherell.

Spring Session, 1871.

STUDENTS.	STATES.	PRECEPTORS.
Adams, O. J. H.	Illinois	Harvard University.
Banton, Benson	Iowa	Practitioner.
Brown, J. H. F.	Illinois	Dr. Charles H. Quinlan.
Burbank, Charles H.	"	Faculty.
Crane, O. Phillip	"	Dr. J. N. Ellsbury.
Dodge, Cass. M.	"	Dr. William H. Price.
Ernest, O. L.	"	Practitioner.
Farrar, Preston W.	"	Dr. B. F. Hill.
Gardiner, Charles	"	Faculty.
Guibor, Charles H., M.D.	Colorado	Practitioner.
Hall, Benjamin R., M.D.	Wisconsin	
Hayes, Plymmon S.	Illinois	Dr. Justin Hayes.
Hollo, Andersh L.	Wisconsin	Dr. W. W. Mayo.
Huddleston, Reuben H.	Illinois	Dr. Clark Leal.
Hunter, Joseph C.	Iowa	
King, C. F.	Illinois	Dr. G. T. Loomis.
Magoon, D. Earll	Wisconsin	Dr. Robert W. Earl.
Mannon, Adrian A.	Illinois	Dr. William Walker.
McElroy, Patrick H., M.D.	"	Practitioner.
McLean, M. G.	"	Dr. R. H. Harcourt.
Migwault, David R.	"	Dr. H. A. Migwault.
Oliver, O. Cromwell	"	Dr. J. W. Oliver.
Owen, Abram	Texas	Dr. R. J. Brackenridge.
Richardson, A. N.	Illinois	Dr. Joseph Jones.
Roberts, G. Frank	"	Prof. E. Ingals.
Schaefer, John F.	"	Dr. A. B. Brackett.
Slemmons, Daniel M.	"	Drs. J. S. & Z. H. Whitmire.
Strong, A. B.	"	Prof. J. P. Ross.
Walker, John Godfrey	"	Prof. J. Adams Allen.
Wells, Robert W.	Texas	Dr. R. J. Brackenridge.

GRADUATES OF RUSH MEDICAL COLLEGE,

SINCE ITS ORGANIZATION.

SESSION 1843-44.

William Butterfield, Thomas P. Whipple, John McLean, } *Honorary Degree.*

1844-45.

Alfred E. Ames, Josiah B. Herrick, Stephen Munroe, Jr.,
William Fosdick, Almon W. King, Isaac Watts Garvin,
Edwin R. Long, Samuel W. Ritchey, Arnold H. Neadham.
Ira E. Oatman, Nehemiah Sherman,

1845-46.

Elwood Andrew, Newton P. Holden, Halsey Rosenkrans,
J. Herman Bird, Alexander B. Malcolm, Robert Scott,
Daniel K. Hays, Cicero Robbe, William W. Welch.
James M. Higby,

W. G. Montgomery, M.D., *Honorary.*

1846-47.

H. I. E. Balch, Fred. E. Hagemann, Wesley Pierce,
S. A. Barry, H. P. Hernes, Isaac Snyder,
I. R. Bradway, Ephraim Ingals, James F. Saunders,
Joseph Blount, Philip Kirwin, J. C. Leary,
M. B. Elgin, Leonard L. Lake, David J. Peck,
A. V. Gilbert, Lafayette W. Lovell, J. E. McGirr.
E. A. Gilbert,

Samuel Grimes, M.D., *Honorary.*

1847-48.

Daniel M. Camerer, Ambrose Jones, I. G. Osborn,
W. Chamberlain, C. W. Knott, J. Pearson,
J. A. Clark, J. C. Lovejoy, A. Reynolds,
A. B. Crawford, Sample Loftin, W. W. Sedgewick,
Milton D. Darnell, William Matthews, Warren M. Sweetland,
Uri P. Golliday, Thomas C. Moor, R. R. Stone,
R. S. Hawley, I. H. McNutt, James P. Tucker,
I. C. H. Hobbs, John Newton, C. C. Warner,
E. G. Hough, John Nutt, L. W. Warren,
G. J. Huey, O. C. Otis, Charles Ware.

E. S. Kimberly, *Honorary.*

1848-49.

Alfred W. Armstrong, Israel G. Harlan, Edwin G. Meek,
William W. Cunnerly, George M. Huggans, Gideon C. Paramore,
Asa Clark, Calvin B. Lake, James C. Patterson,
Harvey Cutler, Robert Pennel Lamb, Charles H. Richings,
Joseph W. Freer, Orrin T. Maxson, John H. Warren,
Charles C. Garrett, Peter B. McKay, Jerome F. Weeks.

Dr. Thomas Hall, Dr. James H. Budd, *Honorary.*

1849-50.

Joseph L. Anderson,
Clay Brown,
Thomas D. Brown,
Cyrus G. Blood,
Henry F. Brown,
Willard F. Coleman,
Kimball Favor,
Edward J. French,
John Gregory,
Isaiah P. Hamilton,
S. Rush Haven,
George Higgins,
Orson C. Hoyt,
Alexander Hull,
Franklin B. Ives,
M. Tevis Klepper,
Thomas G. Klepper,
Charles J. Macon,
Alonzo L. McArthur,
Manly Miles, Jr.,
Risdon C. Moore,
William C. Oatman,
Silas S Parkhurst,
William J. Paugh,
John M. Phipps,
William W. Perry,
Giles P. Ransom,
David Rogers,
Josiah R. Snelling,
John W. Spalding,
Benjamin G. Stephens,
Benjamin F. Stephenson,
Edwin Stewart,
Isaac E. Thayer,
John M. Todd,
Henry D. C. Tuttle,
Harmon Wasson,
Jas. P. Walker,
George S. Wheeler,
Zachariah H. Whitmire,
Thomas Wilkins,
William W. R. Woodbury,
James R. Zearing.

James S. Whitmire, M.D., *ad eundem.* Dr. E. S. Cooper, *Honorary.*

1850-51.

Gordon Chittock,
S. L. Craig,
F. W. Coolidge,
J. H. Constant,
G. S. Crawford,
William M. Crowder,
O. D. Coleman,
H. C. Donaldson,
C. J. Hull,
J. C. Hinsey,
A. M. Johnson,
V. P. Kennedy,
T. S. Loomis,
H. E. Luther,
L. D. Latimer,
R. Morris,
J. H. Murphy,
L. A. Mease,
S. R. Mason,
G. C. Merrick,
J. P. Porter,
L. C. Pomeroy,
B. O. Reynolds,
William W. Sweeney,
E. T. Spotswood,
S. T. Trowbridge,
A. M. Thorn,
C. Van Doren,
Edwin Wright,
John Walker,

James S. Russell, M.D., *ad eundem.*

Dr. James G. M. Meehan, Dr. Thompson Mead, *Honorary.*

1851-52.

Henry D. Adams,
George W. Albin,
Franklin Blades,
Benjamin T. Buckley,
George A. Bodenstab,
G. Judson Bentley,
William D. Craig,
F. Marion Crouse,
Alexander B. Chadwick,
Theodore G. Cole,
James A. Collins,
Alexander De Armond,
William H. Davis,
John Garrison,
Walter R. Godfrey,
Stephen C. Gillett,
William C. Hunt,
Vincent L. Hurlbut,
Marsena M. Hooton,
William M. Hobbie,
Orvis S. Johnson,
Hosmer A. Johnson,
Hiram C. Jones,
Abram H. Knapp,
Isaiah P. Lynn,
Ezra M. Light,
Hugh Marshall,
Lewis D. Martin,
M. G. Parker,
J. Harrison Reeder,
Dudley Rogers,
A. F. St. Sure Lindsfelt,
Leander D. Tompkins,
Ezra Van Fossen,
Edwin R. Willard,
John D. Woodworth,
Jeremiah Youmans.

1852-53.

Robert F. Bennett,
J. A. Breneman,
D. Alphonso Colton,
P. G. Corkins,
William Curliss,
O. D. Chapman,
J. P. Cunningham,
Elijah H. Drake,
Hosea Davis,
M. F. Gerard,
Robert F. Henry,
S. B. Harriman,
Oliver S. Jenks,
J. A. James,
Warren Millar,
Solon Marks,
James B. Moffett,
Henry Parker,
H. W. Ross,
John F. Starr,
Henry S. Steele,
Josiah Stanley,
Hiram Smith,
J. R. Wheaton,
S. H. Whittlesy,
R. Q. Wilson,
Daniel Whitinger,

A. D. Dwight,
Robert W. Earle,
James Gregory
John PhiHips,
James M. Proctor,
Arthur Young,
William M. Young.

1853-54.

Wm. M. Avery,
Albert Boomer,
Washington Brenton,
John W. Collver,
Charles C. Cornett,
Charles W. Davis,
Isaac N. Davis,
Joseph M. Edwards,
Joseph N. B. Elliott,
Hezekiah Fisk,
Melancthon W. Fish,
Thomas D. Fitch,
William A. Hillis,
Roscoe L. Hale,
John F. Hamilton,
Richard S. Hallock,
Edward Hopkins,
Anderson W. King,
John W. Lynch,
William Manson,
Harvey C. Morey,
Henry W. Mann,
J. B. Morrison,
R. M. McArthur,
John T. Mayfield,
John N. Niglas,
Myron W. Robbins,
Simeon P. Root,
Reuben Sears,
William B. Swisher,
George W. Slack,
Thomas P. Seller,
Charles D. Watson,
William Watson,
Enos. P. Wood,
David Whitmire,
Stephen P. Yeomans.

1854-55.

George A. Byrns,
Jesse Barber,
Lewis C. Bicknell,
Horace C. Clapp,
Michael R. Chadwick,
Thaddeus M. Crombie,
Berry W. Cooper,
Hiram L. Coon,
Solomon S. Clark,
Jason N. Conley,
Mordecai Davis,
Darwin DuBois,
James Evans,
James Ford,
Charles Gorham,
George T. Goldsbury,
James F. Grove,
Vernon Gould,
Christopher Goodbrake,
Thomas R. Hanna,
Freeborn F. Hoyt,
Alonzo L. Hutchinson,
Elisha G. Horton,
William H. Heller,
Charles W. Jenks,
Leroy H. Kennedy,
John McHugh,
John F. McCarthy,
James C. McMurtry,
Ross W. Pierce,
Isaac Rice,
Hugh Russell,
Homer C. Rawson,
Allen A. Rawson,
James M. Suddath,
John W. Trabue,
Henry Van Meter,
William Van Nuys,
Hiram J. Van Winkle,
Martin Wiley,
Elias Wenger.

1855-56.

Meredith C. Archer,
J. Milton Barlow,
Daniel Bowers,
Almond C. Buffam,
Edward W. Boothe,
David W. Carley,
John W. F. Clawges,
A. B. Carey,
A. Jackson Crain,
James L. Crain,
Francis M. Constant,
John E. Deming,
Hamilton C. Daniels,
Roswell Eaton,
John J. Everhard,
Edwin Gaylord,
James P. Graham,
William F. Green,
James W. Green,
William A. Gordon,
Samuel Griffith,
Robert Hitt,
George W. Kittell,
H. W. Kreider,
David T. Kyner,
L. L. Leeds,
B. S. Lewis,
D. LaCount,
A. A. Lodge,
D. M. Marshall,
T. C. McGee,
Z. H. Madden,
B. G. Neal,
W. H. Phillips,
J. R. Robson,
Bailey Rogers,
F. Ronalds,
Lee Smith,
Joseph Williamson,
Horace Wardner,
R. Winton.

J. Henderson, M.D., *ad eundem.* Dr. M. M. Latta, *Honorary.*

1856-57.

A. W. Adair,
J. S. Bowen,
M. H. Bonnell,
D. C. Bennett,
E. F. Hubbard,
A. M. D. Hughes,
A. L. Kimber,
J. C. Lowrie,
L. H. Smith,
D. H. Spickler,
J. H. Tyler,
J. P. Terrell,

J. [illegible]vens, J. J. Luke, S. L. Urmston,
L. [illegible]rann, J. [illegible] Miller, W. F. Vermillion,
T. B. Dever, J. [illegible] Marsh, B. Wilson,
T. D. Fisher, E. [illegible]cAferty, B. F. White,
T. A. Graham, J. [illegible] Cleary, P. J. Wardner,
Lafayette H. Gray, J. [illegible] Paul, G. W. Wilkinson,
Samuel Higinbothem, Ed[illegible]n Powell, E. A. Wilcox,
W. [illegible]. Hall, J. L. Phillips, B. Woodward,
C. [illegible]ill, N. [illegible] Pearson, F. W. White.
Ch[illegible]s Hamill, T. J. Shreves,

J. W York, M.D., *ad eundem.*

Dr. William Long, Dr. H. Noble, *Honorary.*

1857-58.

J[illegible]. Brown, T. C. Jennings, B. F. Ross,
[illegible]rookhart, B. F. Keith, W. H. Rockwell,
R. C. Black, Charles J. Keegan, J. Slack,
F[illegible]eeman Clark, Willis May, William Somers,
P. Corcoran, W. L. May, C. V. Snow,
S. B. Davis, A. J. Miller, L. D. Smedley,
Benjamin Durham, D. B. Montgomery, Benjamin F. Swofford,
J. B. Earl, John O'Conner, Owen Wright,
C. N. Ellinwood, O. B. Ormsby, J. D. Webster,
W. B. Harl, J. T. Pearman. J. B. Wilson,
Allen Heavenridge, J. L. Patten, Thomas Winston,
J. N. Green, J. S. Pashley, Eli York.
J. D. Gray,

Solomon Davis, M.D., Waldo W. Lake, M.D., *Honorary.*

1858-59.

L. Grant Armstrong, William C. Hopwood, W. E. Peters,
E. H. Ayres, Blixton Harris, E. O. F. Roler,
Benjamin W. Bristow, William L. Kreider, E. A. Steele,
A. M. Blackman, J. W. W. Lawrence, P. R. Slingsley,
John A. Cook, W. H. Lyford, A. B. Taylor,
George W. Corey, Lafayette Lake, Myron Underwood,
J. R. Conklin, R. McGee, E. L. Welling,
N. M. Douthitt, F. Mason, R. F. Williams,
E. C. Dickinson, Samuel McNair, J. H. Wiley,
John H. Farrell, J. R. Pearce, J. F. Williams.
Richard Hull,

J. Drake Harper, M.D., *ad eundem.* S. M. Mitchell, *Honorary.*

1859-60.

Orson B. Adams, John B. Felker, Wm. F. Osborn,
John J. M. Angear, A. M. Golliday, George W. Richards,
John T. Billington, Jethro N. Hatch, Edward Thomas,
Frederic Bartels, Daniel Kirkpatrick, James Thompson,
John B. Baker, Thomas I. Fritz, Vincent S. Thompson.
Edward L. H. Barry, Leigh R. Holmead, J. S. Underwood,
Hiram Carnahan, Milton N. Isaac, Wm. V. Wiles,
Henry Durham, William Irwin, Samuel N. Sheldon,
B. I. Dunn, Hiram. C. Luce, C. M. Smith,
John Dancer, John McDamron, Robert B. Ray,
Rufus M. Elliott, Percy McAlpin, James F. Spain.
John E. Ennis, Phillip Matthei,

Dr. Calvin Wheeler, *Honorary.*

1860-61.

Wilford Bates,
Charles Bunce,
Allen S. Barndt,
Wm. C. Brown,
Sidney S. Buck,
Benjamin H. Bradshaw,
Henry S. Blood,
Elijah A. Clark,
Daniel M. Cool,
Thomas J. Dunn,
Edward C. De Forest,
Morton M. Eaton,
George Egbert,
Wm. B. Graham,
Henry J. Herrick,
Zenas P. Hanson,
Clinton D. Henton,
Ezekiel Keith,
John T. Keables,
Enoch W. Keegan,
Abner D. Kimball,
Robert M. Lackey,
Z. James McMaster,
James H. Mayfield,
Henry H. Maynard,
Richard E. McVey,
John Murphy,
Samuel C. Owen,
Allen M. Pierce,
Henry V. Passage,
Madison Reece,
E. Fred. Russell,
Theodore W. Stull,
Edward P. Talbott,
Charles B. Tompkins,
Israel B. Washburn,
O. G. Walker.

Dr. Robert C. Hamill, Dr. Theodore Hoffman, *Honorary*.

1861-62.

Albert A. Ames,
Charles E. Allen,
Stephen G. Armstrong,
George W. Beggs,
Aurelius T. Bartlett,
Leonard L. Bennett,
James Brown,
Elijah W. Boyles,
William L. Cuthbert,
J. Griffin Conley,
William D. Carter,
Samuel M. Dunn,
Thomas G. Drake,
James B. Farrington,
A. Z. Huggins,
Jacob H. Houser,
Riley B. Hayden,
Jacob M. Hagey,
Clark E. Loomis,
I. Meek Lanning,
George J. Monroe,
William Meacher,
William McKnight,
Fordyce R. Millard,
William Rush Patton,
Holland W. Richardson,
William R. Russell,
Charles M. Richmond,
Robert E. Stevenson,
Samuel B. Ten Broeck,
I. Allen Torrey,
Alfred H. Whipple,
D. Bishop Wren,
John A. Ward,
Egbert H. Winston.

J. C. Taggart, M.D., *Honorary*.

1862-63.

Gordon Andrews,
Charles F. Barnett,
Ela L. Bliss,
E. Bishop,
Frederick W. Byers,
James Cunningham,
Philo W. Chase,
John W. Dean,
William B. Dunkle,
Charles F. Dilly,
Charles F. Elder,
Francis A. Emmons,
Urian B. Ferris,
Stephen N. Fish,
William M. Gregory,
Harrison H. Guthrie,
Myron Hopkins,
Pryer J. Herman,
George F. Heideman,
Samuel G. Irwin,
Daniel C. Jones,
Hiram M. Keyser,
Charles B. Kendall,
James Kelly,
Edward E. Lynn,
Charles F. Little,
G. Allen Lamb,
ames Muncey,
George C. McFarland,
Frank C. Mehler,
James H. McNeil,
Thomas H. Montgomery,
John McLean,
Samuel L. Marston,
L. Pitt Y. McCoy,
Elmer Nichols,
J. Copp Noyes,
Cornelius O'Brien,
Jacob W. Ogle,
Wesley Phillips,
Byron G. Pierce,
William C. Piatt,
John M. Rankin,
James I. Ransom,
Lemuel H. Rogers,
Fernando C. Robinson,
Lewis H. Skaggs,
John W. Saucerman,
Abram L. Small,
W. H. Smith,
H. W. Sigworth,
William Scott,
William H. Tompkins,
Pembroke R. Thombs,
John Ll. Williams,
William T. Wilson,
James A. Williams,
John Zahn.

1863-64.

Frank B. Adkins,
Harrison Akely,
Orlenzer Allen,
Samuel J. Avery,
Charles M. Babcock,
Lyman F. Babcock,
A. J. Bacon,
S. K. Barclay,
G. Frank Beasley,

George R. Bibb,
William T. Bradbury,
Charles A. Bucher,
Spencer Byrn,
Frank D. Cass,
F. Marion Cassell,
Ellston Chamberlin,
James E. Coakley,
Ephraim Dayton,
James W. Dora,
T. B. Dora,
Franklin Eells,
J. Wesley Egbert,
F. Edwin English,
J. B. Fares,
Horace Gaylord,
E. T. Glasener,
J. A. Goldsbury,
Lewis H. Goodwin,
J. J. Gulick,
J. Milton Hiatt,
Robert L. Hill,
H. C. Hollingsworth,
Frank A. Jordan,
Erwin L. Jones,
Augustus P. C. Jones,
I. C. Johnson,
George N. Jennings,
John J. Kelly,
Leslie E. Keely,
Robert S. Kelso,
John R. Kerrell,
A. H. Kinnear,
L. J. M. Kords,
Bartlett Larimer,
Gilbert B. Lester,
Timothy T. Linn,
Lorenzo D. Lowell,
I. Ellis Lyons,
S. B. McGlumphy,
Peter S. McDonald,
Samuel Mendenhall,
Henry A. Mix,
Martin E. Munger,
James A. Monroe,
Jabez H. Moses,
Alexander P. Nelson,
Eugene L. Nelson.
J. N. O'Brien,
Roswell R. Palmer,
G. Hial Peebles,
Edward H. Price,
Charles M. Richardson,
Phillip Shaffer,
George W. Schuchard,
William A. Smith,
J. M. Still,
J. Dwight Stillman,
John M. Swift,
John W. Thayer,
Joel T. Tevis,
Marvin Waterhouse,
John M. West,
William F. Welsh,
J. A. Williams,
James M. Watkins,
G. D. Winch,
Samuel Wilson,
Charles A. White,
Orlando S. Wood,
Titus P. Yerkes.

Chas. White, M.D., Frederick S. C. Grayston, M.D., *ad eundem.*

1864-65.

W. R. Adair,
J. Madison C. Adams,
Henry Allen,
R. M. Allen,
W. C. Baird,
Braxton Baker,
Zopher Ball,
John Becker,
Newton Baker,
C. R. Blackall,
E. J. Bond,
D. W. Bosley,
W. E. Bowman,
James G. Boardman,
J. W. Brown,
W. H. Bright,
J. G. Blanchard,
C. H. Brunk,
C. H. Carlisle,
E. P. Catlin,
W. E. Chamberlin,
H. F. Chesbrough,
Frederick Cole,
Samuel Cole, Jr.,
H. N. Clark,
J. L. Congdon,
J. Cooper,
John Cotton,
Clinton Cushing,
M. Morton Dowler, Jr.,
Andrew J. Eidson,
Samuel S. Elder,
Smith T. Ferguson,
S. A. Ferrin,
Henry A. Folger,
O. D. Ford,
J. H. Foster,
Samuel Galloway,
H. T. Godfrey,
R. Romanta Gaskill,
J. Thomas Hale,
J. M. Harrah,
Thomas C. Hance,
A. P. Herndon,
Wm. H. Hess,
Smith H. Hess,
J. W. Herdman,
Francis M. Hiett,
H. Edward Horton,
George W. James,
Merritt S. Jones,
David R. Johnston,
Charles Kerr,
G. F. Keiper,
W. J. Kelsey,
John L. Kite,
Charles E. Keuster,
C. E. Lamon,
J. H. Leal,
Josiah Lee,
J. G. Meachem, Jr.,
L. B. Morrow,
William A. Morse,
G. D. Maxson,
William M. Newell,
N. W. Nesmeth,
Joseph Otto,
William P. Penfield,
John W. Powell,
Joseph L. Prentiss,
G. W. Priest,
Charles H. Quinlan,
Lafayette Redmon,
A. J. Rodman,
C. B. Reed,
Flavel Shurtleff,
J. L. Shepard,
Emery Sherman, Jr.,
Asbury E. Smith,
W. H. H. Smith,
M. S. Stahl,
G. A. Stevenson,
D. Hedrick Stratton,
G. C. Smythe,
J. L. Trousdale,
John W. Trueworthy,
Henry Van Buren,
G. W. Van Zant,
Theodore Wild,
Joseph H. Wilson,

A. J. Darrah,
S. A. Davison,
S. W. Dodd,
A. C. Douglass,
A. S. Ehle,
C. J. Lewis,
A. W. Lueck,
Carl J. Lucas,
W. B. Lyons,
Isaac L. Mahan,
Horatio B. Withers,
George Worsely,
O. P. B. Wright,
Charles Young.

Martin Baker, M.D., W. H. Dubler, M.D., D. W. C. Denny, M.D., N. Wright, M.D., *ad eundem.*

1865-66.

Ethan P. Allen,
T. E. Annis,
S. B. Ayres,
C. Isham Allen,
Wm. J. Asdale,
Luther Brown, Jr.,
George W. Brown,
T. Newton Booe,
Edward E. Berry,
George A. Clarke,
Samuel C. Cravens,
J. N. Crawford,
James Cozad,
John W. Craig,
Richard Carscadden,
Robert H. Crowder,
James A. Comstock,
George M. Chamberlin,
Wm. J. Carter,
James C. Davis,
Franklin M. Denny,
F. A. Dietrich,
Jos. B. Eversole,
Jerome B. Egbert,
John A. Edmiston,
Henry R. Fowler,
J. C. Fitch,
Chester S. Ford,
John Guerin,
W. L. Goodell,
W. B. Graham,
John N. Grover,
C. Judson Gill,
James E. Gowan,
W. S. Goodell,
John W. Grœsbeck, Jr.,
Julius C. Holmes,
Wm. J. Harris,
Wm. Harper,
Wm. S. Herrick,
Carter B. Higgins,
Abijah F. Henry,
J. M. Hayward,
Fred. W. Hoffman,
E. Howard Irwin,
Wm. H. H. King,
George W. Langfitt,
G. F. Lyons,
Truman F. Loop,
Peter T. Lange,
Jacob W. Magelssen,
James J. Morgan,
James M. McMasters,
A. Wilbur Meachem,
John G. Munsell,
W. W. Murray,
S. C. Maxwell,
Wm. D. Morehouse,
E. A. Morse,
John R. McDowell,
Horace Nichols,
S. F. Paddock,
N. T. Quales,
Rolla T. Richards,
James J. Reed,
Charles E. Rice,
Wm. D. Rutledge,
E. Malden Smith,
M. P. Sigworth,
Wm. D. Scott,
D. Q. Scheppers,
M. F. Smith,
Abram A. Sulcer,
James E. Sutton,
Charles E. Steadman,
Charles True,
Norman Teal,
J. M. Taggart,
Henry Tombœken,
S. S. Troy,
F. J. Van Vorhis,
John T. Wilson,
Robert L. Walston,
Charles J. Winzenried,
L. O. P. Wolfe,
Francis W. Watson,
George A. Wilson,
R. B. Wetmore,
M. V. B. Witherspoon,
A. J. Willing.

Albert H. Hoy, M.D., J. J. Brown, M.D., W. Louis Rabe, M.D., W. Y. Leonard, M.D., *ad eundem.*

Gerhard Christian Paoli, M.D., *Honorary.*

1866-67.

Curtis B. Ames,
Upton A. Ager,
William H. Buckmaster,
Benjamin F. Brown,
Charles C. Brown,
Horatio N. Bradshaw,
Robert J. Brackenridge,
Gideon V. Bachelle,
Otto Basco,
Wesley Clarke,
Jerome H. Crouse,
J. Gilbert Connor,
Andrew P. Davis,
Samuel Hawley,
Semun R. Hewitt,
John P. Humes,
John N. Jones,
Hiram D. Kellog,
Benjamin F. Kierulff,
Justin Worthing Lamson,
William A. Laflen,
William J. Langfitt,
Albert Morrall,
Nicholas R. Marshall,
Joseph K. Mayo,
George E. Miller,
George W. Ray,
Charles A. Rockwood,
Dolphus S. Randall,
Jefferson Robinson,
Stephen E. Robinson,
Dan. S. Root,
T. William Schwan,
T. Newton Stewart,
Irving R. Spooner,
John Simpson,
David T. Sellards,
Lyman T. Strother,
James K. Secord,

William P. Dunne,
William T. Dougan,
Leonard W. Estabrook,
William Eaton,
Charles A. Edgar,
Curtis Treat Fenn,
James Luther Gandy,
Edward B. Hobson,
John Hughes,
Wm. Baker Hathaway,
John W. Hensley,
Joseph W. Morey,
William H. C. Moore,
Allen P. Mitten,
Jerome C. Merrick,
John Massman,
Frederick D. Morse,
Alexander B. Newton,
Henby B. Newell,
Sanford T. Odell,
Henry K. Palmer,
William Porter,
Nelson L. Sweetland,
Samuel Thompson,
John J. Taylor,
Alexander W. Trout,
John C. Tatman,
Thomas J. Tennery,
Henry B. Upton,
W. Hendrix Veatch,
Evart Van Buren, Jr.,
Joseph Van Cowan.

James Murphy, M.D., Maximillian A. Cachot, M.D., *ad eundem.*
David Prince, M.D., Ezra S. Carr, M.D., *Honorary.*

1867-68.

Francis G. Arter,
James B. Armstrong,
James H. Barnwell,
Hugh Brownlee,
James Barr,
A. W. Bosworth,
James R. Barnett,
James H. Baker,
Amos Babcock,
Robert N. Barger,
William H. Christie,
Pascal L. Craig,
John Cassidy,
Henry A. Chase,
James M. Cook,
J. A. Carter,
F. Wallace Coffin,
John B. Draper,
Nelson A. Drake,
David L. Davidson,
Thomas A. Elder,
George W. Elkins,
John T. Foster,
John G. Frank,
Benjamin H. Freeland,
David M. Finley,
Frank Fifeld,
William Flinn,
William J. Fern,
John A. M. Gibbs,
Lyman T. Goodner,
John H. Goodell,
John B. Griswold,
Henry C. Gemmell,
Samuel R. Hicks,
Abrogene Holland,
Cyrus Heywood,
Fernand Henrotin,
Merritt Hurst,
William H. H. Hagey,
Byron Holmes,
Christian B. Hirsch,
J. Robert Haggard,
Walter L. Johnson,
Thomas C. Kimball,
Thomas N. Livesay,
Gershom J. R. Little,
Edmund L. Lathrop,
William A. Looney.
Louis B. La Count,
John G. McKinney,
Abraham Miller,
Benj. C. Miller,
Charles Muth,
Leonidas B. Martin,
James McClure,
John B. Moore,
Americus V. Moore,
Samuel P. McCrea,
Thomas C. McCoughey
William J. Maynard,
Thomas C. Murphy,
Francis McGuire,
Charles A. McCollum,
Albert B. McKune;
Edmund L. Mayo, Jr.,
James Moffit,
Albertis P. McCullock,
William R. McMahan,
Garrett Newkirk,
John R. O'Riley,
Charles T. Parkes,
William Quivey,
William S. Pitts,
Joel Prescott,
John H. Peters,
Bennett A. Payne,
James Pankhurst,
William R. Page,
Joseph B. Rood,
J. Rodney Rundlett,
Wilhelm Rienholdt,
Antonius A. Rowley,
Wm. S. Robertson,
Justin Ross,
William S. Rowley,
E. H. Pardu,
John G. Riddler,
Corydon Richmond,
Royal Reed,
Harrion Stelle,
Ebert S. Sharon,
Daniel Spittler,
Josiah T. Scovill,
John W. Shiption,
DeWitt Clinton Smith,
S. E. Scanland,
John P. Seawright,
Oscar F. Seeley,
John F. Shrouts,
Dana B. Segur,
Charles B. Thrall,
D. H. Arthur Thrane,
George O. Taylor,
John E. Tuttle,
L. E. Towne,
W. Alphonso Wood,
D. Lindley Woods,
Matthias S. Wheeler,
Thomas Audley Wakely,
Charles A. Wheaton,
Richard M. Wigginton,
Hiram G. Wyckoff,
Rush Winslow,
James I. Wakefield,
Henry Joseph Warworth,
Thomas J. Yount.

Daniel C. Babcock, John W. Cowden, W. F. Hani, William Little, William N. Bailey, Abram Hard, } *ad eundem.*
Joseph Van Dyke, Orpheus Evarts, John Ten Broek, J. J. Woodward, J. S. Bobbs, } *Honorary.*

1868-69.

William H. Austin,
James M. Adams,
Marcellus O. Baldwin,
Russell Broughton,
Thompson R. Brady,
Frank L. Bradley,
John W. Bacon,
Hiram H. Bardwell,
Samuel H. Birney,
David J. Brookings,
Robert Briggs,
William M. Burton,
Simon P. Brown,
Robert H. Brown,
Arthur B. Brackett,
Galland A. O. Bailey,
James Baker,
John J. Cameron,
Cassidy Chenoweth,
Israel Cunkle,
Thomas Cosgrove,
John P. Cloyd,
Nelson H. Church,
Amos A. Covalt,
William G. Cochrane,
James G. Cameron,
Moritz B. Carleman,
Joseph W. David,
William A. Danforth,
William Dunlap,
Michael Donnelly,
Cyrenius A. David,
Arthur W. Edwards,
James H. Ethridge,
Frank M. Elliott,
John W. Firkins,
Ezra K. Friermood,
Gustav H. C. Fricke,
Lee W. Fulton,
James R. Fyffe,
William A. Gordon,
Oliver Gard,
Joseph B. Galer,
Job L. Gregory,
Charles W. Goodale,
James R. Groesbeck,
Julius F. C. Hoffman,
John B. Hamilton,
Herbert S. Hill,
William C. Hoover,
Melancthon Hilbert,
Charles E. Hogeboom,
James R. Holgate,
William C. Johnson,
John M. Jenkins,
Peter E. Kierland,
Anders Klingberg,
Joseph Knowles,
Jahiel C. Kilgore,
Frederick H. Linde,
Justin J. Leavitt,
Hugh E. Lindsay,
George W. Lee, Jun.,
Augustus R. Logan,
Joel W. Morris,
Russell L. Moore,
Stephen P. McClure,
Adam E. Miller,
Andrew J. Miller,
John McGinnis,
John C. Morgan,
James W. McLean,
Samuel McLellan,
James S. Moffatt,
William Monroe,
William T. Nichols,
John E. O'Brien,
Lorenzo Northrup,
Almon Patterson,
Thomas W. Parker,
John B. Ralph,
Robert N. Rickey,
Harley G. Ristine,
George W. Roberts,
Vincent H. Rose,
George W. Stewart,
Frank D. Stannard,
William H. Schrock,
Alonzo B. Shepard,
Byron N. Stevens,
Fred. F. Sovereign,
Joshua B. Sprague,
Charles C. Sprague,
Thomas B. Spalding,
Albert R. Tucker,
Dallas G. M. Trout,
Sylvester Thompson,
James Tweddale,
William L. Underwood,
William H. Wirt,
George H. Waller,
Solon C. White,
Otho B. Will,
Basil M. Webster,
George Williamson,
John Williamson,
Frank S. Wadsworth,
John S. Whitley.

John S. Clark, M.D., Frederick L. Matthews, M.D., Thomas R. McInnes, M.D., Robert Tobey, M.D., } *ad eundem.*

Oliver Everett, M.D., *Honorary.*

1869-70.

Lyman J. Adair,
William R. Aydelott,
George H. Aurner,
Thomas J. Adams,
George T. Acres,
D. Bryan Baker,
Charles A. Barnes,
Fred. T. Bicknell,
L. Lafayette Bond,
John Ellison Best,
Gilbert E. Bridgman
John Bloomingstone,
Cyril P. Brown,
Albert D. Ballou,
William J. Burns,
David O. Bennett,
Thomas Blakeslee,
William M. Boyd,
William L. Crowder,
Orville H. Conger,
Milton C. Carver,
Paul H. Curtner,
Thomas Coates,
James McNab Cassels,
Lafayette W. Case,
Howard C. Crist,
Michael J. Donnelly,
Samuel W. Durant,
Samuel T. Davis,
Isaac R. Dunning,
Edward F. Dann,
Daniel L. Dakin,
John W. Dod,
Jacob R. Dosch,
Hamilton P. Duffield,
Richard J. Eaton,
Milton H. Everett,
William C. Eichelberger
Robert S. Edgar,
Perry M. Evans,
Abel Ford, Jun.,
William E. Fenwick,
Edward R. Fletcher,
George S. Focht,
S. Campbell Fenton,

William Fox,
Benjamin F. Farley,
O. G. Given,
Augustus H. Guernsey,
John Green,
George Green,
Strader S. Goldsberry,
Samuel W. Gould,
John W. Goe,
Joseph C. Gifford,
Jesse T. B. Gephart,
William Henry,
Benjamin R. Helms,
George W. Hudson,
William Harvey,
Frederick C. Hageman,
Marcus M. Hale,
Thomas A Holman,
Bishop B. Kelley,
Adrian A. Kitchingman,
Horace R. Littlefield,
August Liljencrantz,
Ledyard Verdine Lewis,
Clark Leal,
Benjamin F. LaRue,
John M. Lester,
Frank L. Lewis,
Allen R. Law,
Laurence A. Lawrason,
Stephen W. Lee,
William O. Mendenhall,
Phineas S. Mulvane,
William L. McLane,
H. Walter Morehouse,
William J. Moore,
Andrew J. Moore,
Julius A. Morris,
George P. Morey,
Pierre L. Monast,
James A. Matthews,
Nicholaus Molitor,
Samuel Miller,
Simon P. Morse,
D. H. McFarland,
Albert B. Modesitt,
Henry M. Marvin,
Charles D. Manning,
T. Fletcher McFarland,
George B. Noyes,
Oliver C. Ormsby,
Milo Place,
Lewis C. Page,
William H. Palmer,
Francis M. Pickins,
Benjamin T. Phillips,
Robert O. Purviance,
Judson C. Panter,
William B. Porter,
Charles E. Quire,
Walter F. Randolph,
James W. Reeder,
James C. Reynolds,
Charles W. Russell,
John Wiley Snider,
William H. Stewart,
Zachary T. Stanley,
William M. Smith,
Theophilus Sprague,
James B. Stetson,
Henry C. Soule,
Conrad Secrest,
H. Watson Smith,
Sylvester S. Smith,
John H. Stewart,
Lewis A. Snyder,
John T. Scott,
Jacob D. Smith,
Samuel L. Tyner,
John W. Tope,
William Todd,
J. Austin Thompson,
Delinso A. Walden,
John C. Webster,
John C. Waite,
Leonard P. Woodworth,
Charles A. Wilcox,
Albert Wilgus,
Gideon A. Weed.

Richard H. Plummer, M.D., David Dodge, M.D., J. F. Grimes, M.D., } *ad eundem.*
Andrew McFarland, *Honorary.*

1870-71.

Edward V. Anderson,
William W. Baxter,
Wm. E. Blackman,
Income G. O. Bailey,
Henry S. Bachman,
Thos. H. Bragg,
Alfred L. Buchan,
George W. Brandon,
James M. Bartholow,
Elbert W. Clarke,
Edward J. Chapman,
Frank E. Conan,
Norman S. Craig,
Corwin W. Cornell,
Daniel B. Collins,
Benjamin D. Copp,
Hezekiah J. Crumpton,
Jesse W. Dawson,
R. Ralph Dewitt,
Andrew C. Donovan,
Albert A. Dye,
John L. Hayes,
Benjamin R. Hall,
Joseph L. Hagerty,
Charles A. Hudson,
James H. Hutchins,
Joseph V. Harris,
Ephraim F. Ingals,
Henry Jones,
Joseph Evans Jones,
Charles D. Knapp,
Geo. M. Macklin,
Erasmus G. Minnick,
Wm. T. Montgomery,
Ennis N. McGarry,
James N. Miller,
David C. Nicoson,
George E. Newell,
A. Palmer Peck,
John F. Pritchard,
Lewis L. Ratliff,
David T. Douglass,
Rinaldo E. Egbert,
William Eastman,
William L. Everett,
George W. Frost,
John M. Furnas,
Marsena H. French,
Thos. D. Ford,
Melchert H. Garten,
Charles H. Guibor,
Henry A. Given,
Jared Y. Galer,
Robert C. Grigg,
Samuel A. Greenwell,
Gustav G. Goll,
William R. Geiger,
Thomas Gilluly,
Seth T. Hurst,
William L. Harcourt,
Jos. N. Hannaford,
Thomas Kelley,
Joseph C. Lincoln,
Thomas P. Lark,
Philander H. Leavitt,
Robert LaGrange.

William T. Leonard,	J. Wilson Sparks,	Isaac H. Taylor,
Robert J. Mitchell,	Alfred G. R. Schlosser,	W. W. Williams,
Patrick Henry McElroy,	Preston Stebbin,	Charles A. White,
John A. Masterson,	J. Oliver Stanton,	John A. White,
Robert McPherson,	E. LeRoy Turner,	Fred. B. Wood,
Charles D. Roome,	Leverett W. Thomas,	Ephraim B. Young.
Albert J. Roe,		

William S. Baker, M.D., Ill.; Amos Knight, M.D., Mich.; Mahlon H. L. Schooley, M.D., Mo.; Dan. L. Jewett, M.D., Ill., } *ad eundem.*

Thomas M. Hess, M.D., Ill.; Zacheus Bass, M.D., Vt., *Honorary.*